

BID DOCUMENTS/PACKET

**Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806**

EDA Project #: 07-79-07720

TABLE OF CONTENTS

1. *Project Summary*

_____ a. Project/Bid Proposal Overview (5 pages)

2. Bidding Guidelines

_____ a. A701 Instruction to Bidders (8 pages)

_____ b. Bid Form and Designation of Subcontractors (4 pages)

_____ c. Sample Bid Quotation Form (1 page)

_____ d. G705 Subs List Form (1 page)

_____ e. Non-Collusion Form (1 page)

3. Qualifications

_____ a. A305 Qualification Statement (1 pages)

_____ b. A305 Exhibit A – General Information (3 pages)

_____ c. A305 Exhibit B – Financial and Performance Information (2 pages)

_____ d. A305 Exhibit C – Project-Specific Information (3 pages)

_____ e. Customer Reference Listing (1 page)

4. Bid Bonds

_____ a. A310 Bid Bond (2 pages)

_____ b. A312 Bid Payment Bond (4 pages)

_____ c. A312 Bid Performance Bond (4 pages)

5. **Contract Documents**

_____ a. A101-2017 Standard Form of Agreement Between Owner & Contractor(8 pages)

_____ b. A101 Exhibit A Insurance & Bonds (7 pages)

_____ c. Insurance Requirements Form (2 pages)

_____ d. Insurance Instructions (2 pages)

6. **General Conditions**

_____ a. A201-2017 General Conditions of the Contract for Construction (39 pages)

_____ b. Supplemental Conditions to the A201-2017 (5 pages)

_____ c. EDA Contracting Provisions for Construction Projects (24 pages)

_____ d. Current Prevailing Davis-Bacon Wage Rate Determination 11/03/2023 (25 pages)

_____ e. EDA "Notice of Requirements for Affirmative Action" (1 page)

_____ f. Lobbying Restriction Form (Form CD-512) (1 page)

_____ g. SPC_V1 Project Manual (1101 pages)

7. **Site Reports**

_____ a. Soils Report

_____ b. Materials Hazard Report

8. **Plans**

_____ a. City Stamped Approved Plans

2299 Pacific, LLC

Request for Proposal

2299 Pacific Avenue, Long Beach, CA 90806

Architects McDonald, Soutar & Paz, Inc. (MSP) on behalf of 2299 Pacific Avenue, LLC (2299) and Economic Resources Corporation (ERC), is soliciting proposals from qualified construction companies to provide professional services for construction work at 2299 Pacific Avenue in the city of Long Beach.

Five (5) copies of the proposal must be submitted on or before **February 15, 2024** at 10am. They can be dropped off or mailed via courier/fedex/ups, etc. at 3575 Long Beach Blvd., Long Beach, CA 90807. Proposals shall be in a sealed envelope and clearly marked: "Proposal – 2299 Pacific Avenue" in the lower left corner. Questions concerning this solicitation should be directed to MSP/2299, by email to both Mike Soutar (msoutar@architectsmsp.com) and Barbara Ertefai (bertefai@economicresources.org).

For specific instructions on information to include in the Proposal, please refer to the section below entitled Proposal Elements.

PROJECT DESCRIPTION

This project will renovate an approximate 5,900 square foot building situated on a 23,200 square foot lot in the Wrigley neighborhood in the city of Long Beach, CA that was originally constructed as a bank branch, into a state of the art child care facility. This project will include renovating the exterior and interior of the building, and redesigning and improving the parking lot for outdoor activities and playground space.

The Authorized Scope of work for this project includes:

Renovation of an approximately 5,900 square foot building and outdoor space for childcare activities. Building improvements include renovation of the roof, HVAC system, exterior façade, bathrooms, windows, doors, ceiling, flooring, lights, electrical, plumbing, and insulation. Outdoor improvements include installation of new security gates, fencing, concrete, pavement, playground surfaces, ADA accommodations, landscaping, and irrigation. Also included is demolition and removal of a 1974 bank vault. The child care center will serve K to 8th grade students in the Wrigley neighborhood of Long Beach, CA. YMCA of Greater Long Beach will operate their school age programs for 75-125 children per day.

This project is jointly funded by ERC/2299 Pacific, LLC and the U.S .Economic Development Administration.

NOTE: This project will be partially funded with Federal funds from the United States Department of Commerce, Economic Development Administration and therefore is subject to the Federal laws and regulations associated with that program.

SCOPE OF WORK

1. Complete full renovation of building and all exterior surfaces per approved plans/City of Long Beach Municipal Code and per following Exhibits:
2. **Exhibit A:** Current prevailing Davis-Bacon wage rate determination,
3. **Exhibit B:** "EDA Contracting Provisions for Construction Projects"
4. **Exhibit C:** EDA "Notice of Requirements for Affirmative Action"
5. **Exhibit D:** Lobbying Restriction form (form CD-512)

TARGET MILESTONES

- Securing all long lead supplies on or before 14 days from Contract execution
- Pulling permit from the City of Long Beach upon execution of Contract
- Breaking ground on or before 14 days from Contract execution
- Completing project and attaining Final Inspection on or before 8/31/24

PROPOSAL ELEMENTS

To be considered a responsive bidder your response to the RFP should include a fully initialed Table of Contents verifying all bid documents have either been read in full and/or completed in their entirety. Please note that in accordance with 2 CFR 200.320(b)(1)(i)(C) selection will be made principally based on price.

EXAMINATION OF SITE OF WORK AND CONTRACT DOCUMENTS

The bidder shall examine carefully the site of the work contemplated and the plans, specifications and contract documents. The submission of a bid shall be conclusive evidence that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality and scope of work to be performed, the quantities of materials to be furnished, and as to the requirements of the plans, specifications and contract documents.

ADDENDA AND INTERPRETATIONS

Any explanation desired by the bidders regarding the meaning or interpretation of any of the Contract Documents must be requested in writing, with sufficient allowance of time for receipt of reply before the time set for opening of Bids. Any such explanations or interpretations will be made in the form of addenda to the documents and will be furnished to all bidders who shall submit all addenda with their Bids.

Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the plans, specifications and/or contract documents which, if issued, will be mailed by certified mail with return receipt requested to all prospective bidders (at the respective addresses furnished for such purposes), no later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum shall not relieve such bidder from any obligation under his/her bid as submitted. All addenda so issued shall become a part of the contract documents. Technical questions shall be in writing and should be directed to:

MSP – Attn: Mike Soutar (msoutar@architectsmsp.com)

IRREGULAR PROPOSALS

Unauthorized conditions, limitations, or provisions attached to a proposal will render it irregular and may cause its rejection. The completed proposal forms shall be without interlineation, alterations, or erasures. Alternative proposals will not be considered unless specifically requested. No oral, telegraphic, or telephonic proposal, modification, or withdrawal will be considered.

TAXES

No mention shall be made in the proposal of Sales Tax, Use Tax, or any other tax, as all amounts bid will be deemed and held to include any such taxes, which may be applicable.

SELECTION PROCESS AND EVALUATION CRITERIA

This is a sealed bid process and the contract will be awarded to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents.

SELECTION SCHEDULE

Proposed schedule for contractor selection, subject to change, is as follows:

1. Advertise for Proposals: December 11, 2023 – January 5, 2024
2. Pre-Proposal Conference: January 8, 2024
3. Deadline for Submittal of Proposal: February 15, 2024

INSURANCE

Workers' Compensation Insurance, Public Liability Insurance and Builder's Risk Insurance is required to be maintained by the contractor and all subcontractors and will be stipulated in the contract. It will be the owner's responsibility to maintain a copy of the certificate of Builder's Risk insurance provided by the Contractor.

CONTRACT BONDS

The successful bidder shall furnish a Payment bond and a Performance bond. Each bond is to be executed in a sum equal to one hundred percent (100%) of the contract price. All bonds must be executed by a corporate surety licensed to conduct business in the state of California and listed on circular 570. Personal securities will not be accepted.

EXECUTION OF CONTRACT

The successful bidder will be notified in writing by 2299 Pacific/ERC of the award of the Contract. Accompanying the Notice of Award will be the Contract, in duplicate, which the successful bidder will be required to execute and return, together with the Performance and Payment Bonds, and the required certificates and policies of insurance together with the required endorsements thereto (or equivalent) for the Contractor, the worker's compensation certificate, and all other requested documents to MSP within five (5) calendar days following receipt of such Notice of Award. Failure to do so shall be just cause for annulment of the award and for forfeiture of the bid bond which shall be retained as liquidated damages, and it is agreed that the bond sum is a fair estimate of the amount of damages that MSP will sustain by reason of such failure.

2299 Pacific/ERC will promptly determine whether such Contract, Bonds and insurance are as required by the Contract Documents, and upon such determination will forward a fully executed copy of the Contract and a Notice to Proceed with the work to the successful bidder. Signature by both parties constitutes execution of the Contract. In the event of failure of the lowest responsible bidder to sign and return the Contract with acceptable Bonds and insurance as prescribed herein, MSP may award the contract to the next lowest responsible bidder, and, in the event that bidder fails to sign and return the Contract with acceptable Bonds and insurance, 2299 Pacific/ERC may award the contract to the then next lowest responsible bidder, etc.

PAYMENT RETAINAGE PROVISION

The Contract documents call for monthly progress payments based upon the Architect/Project Manager's review of the percentage of work completed based upon contractor's monthly progress invoice. MSP will retain 10 percent (10%) of each progress payment as security for completion of the balance of the work.

SPECIFIC PROFIT AND OVERHEAD FOR CHANGE ORDERS

- 1) For work by its own organization, the Contractor may add the following percentages to approved Change Orders:
 - a. Direct Labor 20 Percent (20%)
 - b. Materials 5 percent (5%)
 - c. Equipment (owned/rented) 5 percent (5%)

- 2) For all such work done by Subcontractors, such Subcontractor may add the same percentages as for the Contractor above to its actual net increase in costs for combined overhead and profit. The contractor may add up to five percent (5%) of the Subcontractor's total for its combined overhead and profit.

TIME OF COMPLETION AND LIQUIDATED DAMAGES

The Contractor shall begin work after the contract has been approved by the EDA and only after written notice to proceed with work has been issued by 2299 Pacific/ERC. The contractor shall then have ten (10) calendar days after receipt of written notice to proceed to begin work. The counting of contract days will begin ten (10) calendar days from the time the Contractor receives the Notice to Proceed or when Contractor starts work, whichever comes first.

This work shall be diligently prosecuted to completion before the expiration of **210 CALENDAR DAYS.**

Contractor shall pay to 2299 as liquidated damages the amount of \$ 500.00 per day, for each and every calendar day(s) delay in finishing the work in excess of the number of working days specified. The parties expressly agree that determining the exact amount of actual daily damage would be difficult to fix in advance and that after reasonable negotiation, this amount is reasonable under the circumstances existing at the time the Contract is made.

TERMS AND CONDITIONS

2299 Pacific/ERC reserves the right to reject any and all Proposals and to waive irregularities and informalities in the submittal and evaluation process. This solicitation for Contractor Services does not obligate 2299 Pacific/ERC to pay any costs incurred by respondents in the preparation and submission of a Proposal. This solicitation does not obligate 2299 Pacific/ERC to accept or contract for any expressed or implied services. Furthermore, 2299 Pacific/ERC reserves the right to award the contract to the next lowest responsive and responsible bidder if the selected Contractor does not execute a contract within (5) days after the award of the proposal.



AIA® Document A701® – 2018

Instructions to Bidders

for the following Project:
(Name, location, and detailed description)

Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806

THE OWNER:
(Name, legal status, address, and other information)

ERC / 2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806

THE ARCHITECT:
(Name, legal status, address, and other information)

Architects McDonald, Soutar & Paz, Inc.
3575 Long Beach Blvd.
Long Beach, CA 90807

TABLE OF ARTICLES

- 1 DEFINITIONS
- 2 BIDDER'S REPRESENTATIONS
- 3 BIDDING DOCUMENTS
- 4 BIDDING PROCEDURES
- 5 CONSIDERATION OF BIDS
- 6 POST-BID INFORMATION
- 7 PERFORMANCE BOND AND PAYMENT BOND
- 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612™–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

ARC website

https://customer.e-arc.com/arcEOC/PWELL_Main.asp?mem=29

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids. *(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)*

ARCHITECTS MSP by E-MAIL REQUESTS to Mike Soutar at MSoutar@architectsmmsp.com

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

ARC website https://customer.e-arc.com/arcEOC/PWELL_Main.asp?mem=29

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter “No Change” or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder’s refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent’s authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

(Insert the form and amount of bid security.)

5% (Five Percent)

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount

of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning days after the opening of Bids, withdraw its Bid and request the return of its bid security.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

ARCHITECTS MSP by E-MAIL to Mike Soutar at MSoutar@architectsmsp.com

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:

(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

ARCHITECTS MSP by E-MAIL to Mike Soutar at MSoutar@architectsmsp.com

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

§ 6.2 Owner's Financial Capability

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)
X
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)
X
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)
X
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013.)

.5 Drawings

Refer to Drawings dated _____

Number	Title	Date
---------------	--------------	-------------

.6 Specifications

Refer to Specifications dated _____

Section	Title	Pages
----------------	--------------	--------------

.7 Addenda:

Number	Date	Pages
---------------	-------------	--------------

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017.)

The Sustainability Plan:

Title	Date	Pages
--------------	-------------	--------------

Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
-----------------	--------------	-------------	--------------

.9 Other documents listed below:

(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

- City Approved Set of Plans Dated _____
- A201-2017
- Sample Bid Quotation From
- G705 Subs
- List Form Non-Collusion Form
- A305 Qualifications Statement Customer Reference Listing
- A310 Bid Bond
- A312 Bid Payment Bond
- A312 Bid Performance Bond
- Insurance Requirements Form
- Insurance Instructions
- Supplemental Conditions to the A201-2017
- EDA Contracting Provisions for Construction Projects
- Current Prevailing Davis-Bacon Wage Rate Determination
- EDA “Notice of Requirements for Affirmative Action”
- Lobbying Restriction Form (CD512)
- SPC_V1 Project Manual

Soils Report
Material Hazard Report



FIRM NAME:

ADDRESS:

TELEPHONE:

BID FORM AND DESIGNATION OF SUBCONTRACTORS

BID CLOSING DATE: February 15, 2024 at 10:00am

FOR

**COMMERCIAL BUILDING TO CHILDCARE FACILITY
2299 Pacific Avenue, Long Beach, CA 90806**

FOR

**2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806**

(One copy shall be filled in and submitted as the bid;
the other shall be bidder's file copy)

Bid documents, drawings and specifications are available from:

Architects ***McDonald, Soutar & Paz, Inc.***
3575 Long Beach Boulevard
Long Beach, CA 90807
562/427-5007
MSP #22-1293

BID FORM AND DESIGNATION OF SUBCONTRACTORS

2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806

TO: 2299 Pacific Avenue LLC, hereinafter referred to as the **OWNER**.

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

COMMERCIAL BUILDING TO CHILDCARE FACILITY
2299 Pacific Avenue, Long Beach, CA 90806

all in strict conformity with the drawings and specifications and other Bid Documents, including Addenda Nos. _____, _____, _____, as issued, all on file with the Architect and the OWNER, for amounts set forth herein.

BASE BID

This Base Bid includes all items of construction as indicated on the drawings and as specified herein. The undersigned hereby agrees to construct and complete, ready for use, all work described above for the sum of

_____ DOLLARS (\$_____).
(Amount in Words)

2. It is understood that the OWNER reserves the right to reject this bid as specified in the Information for Bidders and that this bid shall remain open and not be withdrawn for a period of sixty (60) days.
3. The required bid security is attached hereto.
4. The required list of proposed subcontractors is attached hereto.
5. Notice of Intent to Award Contract or other correspondence should be addressed to the undersigned at the address stated below.
6. The names of all persons interested in the foregoing proposal as principals are as follows:

(IMPORTANT NOTICE: If Bidder or other interested person is a corporation, state legal name of corporation, also names of the president, secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners)

composing firm, if bidder or other interested person is an individual, state first and last names in full.)

7. The undersigned is licensed in accordance with the act providing for the registration of contractors, License No. _____, Type _____.
8. In the event the bidder to whom Notice of Intent to Award Contract is given fails or refuses to return executed copies of the Contract Documents within five (5) days from the date of receiving the Notice of Intent to Award Contract, and post the required bonds within the following 3 days, the OWNER may declare the Bidder's bid deposit or bond forfeited as damages.
9. Designation of Subcontractors

The contractor whose bid is accepted shall not: (1) substitute any subcontractor, (2) permit any subcontract to be voluntarily assigned or transferred or allowed it to be performed by anyone other than the original subcontractor listed in the original bid, or (3) sublet or subcontract any portion of the work in excess of one-half of one percent of the prime contractor's total bid as to which his original bid did not designate a subcontractor, except as approved in writing by the Architect and the OWNER.

Date _____

Name

Address

Name

Address

Proper Name of Bidder

By

(Signature of Bidder)

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

Street Address _____
(Street Number) (Street)

City and State _____
(City) (State) (Zip Code)

Telephone _____
(Area Code) (Telephone Number)

BID QUOTATION FORM

Cost Code Number	Cost Code Description	Amount	Total
1	General Requirements		0
1	500 Temporary Facilities and Controls		
1	520 Construction Facilities		
1	523 Sanitary Facilities		
1	530 Temporary Construction		
1	540 Construction Aids		
1	542 Construction Scaffolding and Platforms		
1	550 Vehicular Access and Parking		
1	560 Temporary Barriers and Enclosures		
1	570 Temporary Controls		
1	580 Project Identification		
1	600 Product Requirements (Scope of Work)		
1	630 Product Substitution Procedures		
1	640 Owner Furnished Products		
1	700 Execution Requirements		
1	712 Local Conditions		
1	740 Cleaning		
1	760 Protecting Installed Construction		
1	903 Hazardous Materials Abatement		
1	904 Hazardous Materials Removal and Disposal		
2	Site Construction		0
2	0 General		
2	200 Site Preparation		
2	220 Site Demolition		
2	230 Site Clearing		
2	240 Dewatering		
2	250 Shoring and Underpinning		
2	260 Excavation Support and Protection		
2	300 Earthwork		
2	310 Grading		
2	311 Final Grading		
2	312 Rough Grading		
2	315 Excavation		
2	316 Backfilling		
2	317 Select Borrow		
2	320 Excavation and Fill		
2	362 Termite Control		
2	370 Erosion and Sedimentation Control		
2	500 Utility Services		
2	621 Foundation Drainage Piping		
2	625 Retaining Wall Drainage Piping		
2	740 Flexible Pavement Asphalt Pavement		
2	750 Concrete Pads and Walks		
2	770 Curb and Gutters		
2	780 Clay Unit Pavers		
2	781 Asphalt Pavers		
2	782 Brick Pavers		
2	783 Interlocking Concrete Unit Paving		
2	784 Stone Unit Pavers		
2	790 Athletic Surfacing		
2	795 Porous Paving		

2	800	Site Amenities			
2	812	Drip Irrigation			
2	813	Lawn Sprinkling and Irrigation			
2	815	Fountains			
2	820	Fences and Gates			
2	821	Chain Link Fences			
2	822	Ornamental Metal Fences and Gates			
2	823	PVC Fences and Gates			
2	824	Wire Fences and Gates			
2	825	Wood Fences and Gates			
2	830	Retaining Walls			
2	850	Bridges/Footbridges			
2	870	Sculpture/Ornamental			
2	900	Landscaping			
2	915	Mulch			
2	917	Soil Preparation			
2	919	Topsoil			
2	923	Seeding and Soil Supplements			
2	924	Sodding			
2	930	Exterior Plants			
2	932	Plants and Bulbs			
2	935	Plant Maintenance			
2	936	Fertilizer			
3		Concrete			0
3	0	General			
3	50	Concrete Subcontractor			
3	100	Concrete Reinforcement			
3	210	Cast-In-Place Concrete			
3	230	Anchor Bolts			
3	300	Footings			
3	310	Expansion Joints			
3	320	Slab Foundations			
3	330	Poured Concrete Basement Walls			
3	350	Concrete Finishing			
3	400	Precast Concrete			
3	500	Cementitious Decks and Underlayments			
3	540	Cementitious Underlayments			
3	600	Grouts			
4		Masonry			0
4	50	Basic Masonry Materials and Methods			
4	200	Masonry Units			
4	400	Stone			
4	500	Refractories			
4	600	Corrosion-Resistant Masonry			
4	700	Simulated Masonry			
4	800	Masonry Assemblies			
4	900	Masonry Restoration and Cleaning			
5		Metals			0
5	50	Basic Metal Materials and Methods			
5	100	Structural Metals			
5	200	Metal Joists			
5	300	Metal Deck			
5	400	Cold-Formed Metal Framing			
5	500	Metal Fabrications			
5	600	Hydraulic Fabrications			
5	700	Ornamental Metal			
5	800	Expansion Control			
5	900	Metal Restoration and Cleaning			

6		Wood and Plastics		0
6	50	Basic Wood and Plastic Materials and Methods		
6	100	Rough Carpentry		
6	200	Finish Carpentry		
6	400	Architectural Woodwork		
6	500	Structural Plastics		
6	600	Plastic Fabrications		
6	900	Wood and Plastic Restoration and Cleaning		
7		Thermal and Moisture Protection		0
7	50	Basic Thermal and Moisture Protection Materials and Methods		
7	100	Damproofing and Waterproofing		
7	200	Thermal Protection - Insulation		
7	300	Shingles, Roof Tiles, and Roof Coverings		
7	400	Roofing and Siding Panels		
7	500	Membrane Roofing		
7	600	Flashing and Sheet Metal		
7	700	Roof Specialties and Accessories		
7	800	Fire and Smoke Protection		
7	900	Joint Sealers		
8		Doors and Windows		0
8	50	Basic Door and Window Materials and Methods		
8	100	Doors		
8	200	Wood and Plastic Doors		
8	300	Specialty Doors		
8	400	Entrances and Storefronts		
8	500	Windows		
8	600	Skylights		
8	700	Hardware		
8	800	Glazing		
8	900	Glazed Curtain Wall		
9		Finishes		0
9	50	Basic Finish Materials and Methods		
9	100	Metal Support Assemblies		
9	250	Gypsum Wallboard		
9	300	Tile		
9	400	Terrazzo		
9	500	Ceilings		
9	600	Flooring		
9	680	Carpet		
9	700	Wall Finishes		
9	800	Acoustical Treatment		
9	900	Paints and Coatings		
10		Specialties		0
10	100	Visual Display Boards		
10	150	Compartments and Cubicles		
10	200	Louvers and Vents		
10	240	Grilles and Screens		
10	250	Service Walls		
10	260	Wall and Corner Guards		
10	270	Access Flooring		
10	290	Pest Control		
10	300	Fireplaces and Stoves		
10	340	Manufactured Exterior Specialties		
10	350	Flagpoles		
10	400	Identification Devices		
10	450	Pedestrian Control Devices		
10	500	Lockers		
10	520	Fire Protection Specialties		

10	530	Protective Covers			
10	550	Postal Specialties			
10	600	Partitions			
10	670	Storage Shelving			
10	700	Exterior Protection			
10	750	Telephone Specialties			
10	800	Toilet, Bath, and Laundry Specialties			
10	820	Bathroom Accessories			
10	880	Scales			
10	900	Wardrobe and Closet Specialties			
11		Equipment			0
11	400	Food Service Equipment			
11	450	Residential Equipment			
11	460	Unit Kitchens			
12		Furnishings			n/a
13		Special Construction			0
13	80	Sound, Vibration, and Seismic Control			
13	700	Security Access and Surveillance			
13	800	Building Automation and Control			
13	850	Detection and Alarm			
13	900	Fire Suppression			
14		Conveying Systems			n/a
15		Mechanical			0
15	50	Basic Mechanical Materials and Methods			
15	100	Plumbing			
15	400	Plumbing Fixtures and Equipment			
15	500	Heat-Generation Equipment			
15	600	Refrigeration Equipment			
15	700	Heating, Venting and Air Conditioning			
15	800	Air Distribution			
15	900	HVAC Instruments and Controls			
15	950	Testing, Adjusting, and Balancing			
16		Electrical			0
16	50	Basic Electrical Materials and Methods			
16	100	Electrical			
16	200	Electrical Power			
16	300	Transmission and Distribution			
16	400	Low-Voltage Distribution			
16	500	Lighting			
16	700	Communications			
16	800	Sound and Video			
17		Markup and Contingency			0
17	10	Contingency			
17	20	Insurance			
17	30	Bond			
17	40	Profit			



AIA[®] Document G705™ – 2001

List of Subcontractors

PROJECT: *(Name and address)*

Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806

DATE:

TO ARCHITECT: *(Name and address)*

Architects McDonald, Soutar & Paz, Inc.
3575 Long Beach Blvd.
Long Beach, CA 90807

ARCHITECT'S PROJECT NUMBER:

22-1293

FROM CONTRACTOR: *(Name and address)*

CONTRACTOR'S PROJECT NUMBER:

(List Subcontractors and others proposed to be employed on the above Project as required by the bidding documents.)

Work/Firm Name

Address/Phone

Superintendent

NON-COLLUSION DECLARATION TO BE EXECUTED

BY BIDDER AND SUBMITTED WITH BID

(Public Contract Code Section 7106)

(Prime Bidder)

I am the _____ of _____,
(Title) (Name of Bidder)

the party making the foregoing bid.

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

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

I declare under penalty of perjury under the laws of the State of California the foregoing is true and correct and that this declaration is executed on this _____ day of _____ 20__ at _____.

(Signature)

(Typed Name)

AIA[®] Document A305[®] – 2020

Contractor's Qualification Statement

THE PARTIES SHOULD EXECUTE A SEPARATE CONFIDENTIALITY AGREEMENT IF THEY INTEND FOR ANY OF THE INFORMATION IN THIS A305-2020 TO BE HELD CONFIDENTIAL.

SUBMITTED BY:

(Organization name and address.)

SUBMITTED TO:

(Organization name and address.)

TYPE OF WORK TYPICALLY PERFORMED

(Indicate the type of work your organization typically performs, such as general contracting, construction manager as constructor services, HVAC contracting, electrical contracting, plumbing contracting, or other.)

THIS CONTRACTOR'S QUALIFICATION STATEMENT INCLUDES THE FOLLOWING:

(Check all that apply.)

- Exhibit A – General Information
- Exhibit B – Financial and Performance Information
- Exhibit C – Project-Specific Information
- Exhibit D – Past Project Experience
- Exhibit E – Past Project Experience (Continued)

CONTRACTOR CERTIFICATION

The undersigned certifies under oath that the information provided in this Contractor's Qualification Statement is true and sufficiently complete so as not to be misleading.

Organization's Authorized Representative
Signature

Date

Printed Name and Title

NOTARY

State of:

County of:

Signed and sworn to before me this day of

Notary Signature

My commission expires:

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.



AIA[®]

Document A305[®] – 2020 Exhibit A

General Information

This Exhibit is part of the Contractor’s Qualification Statement, submitted by _____ and dated the _____ day of _____ in the year _____.
(In words, indicate day, month and year.)

§ A.1 ORGANIZATION

§ A.1.1 Name and Location

§ A.1.1.1 Identify the full legal name of your organization.

§ A.1.1.2 List all other names under which your organization currently does business and, for each name, identify jurisdictions in which it is registered to do business under that trade name.

§ A.1.1.3 List all prior names under which your organization has operated and, for each name, indicate the date range and jurisdiction in which it was used.

§ A.1.1.4 Identify the address of your organization’s principal place of business and list all office locations out of which your organization conducts business. If your organization has multiple offices, you may attach an exhibit or refer to a website.

§ A.1.2 Legal Status

§ A.1.2.1 Identify the legal status under which your organization does business, such as sole proprietorship, partnership, corporation, limited liability corporation, joint venture, or other.

- .1 If your organization is a corporation, identify the state in which it is incorporated, the date of incorporation, and its four highest-ranking corporate officers and their titles, as applicable.
- .2 If your organization is a partnership, identify its partners and its date of organization.
- .3 If your organization is individually owned, identify its owner and date of organization.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

- 4** If the form of your organization is other than those listed above, describe it and identify its individual leaders:

§ A.1.2.2 Does your organization own, in whole or in part, any other construction-related businesses? If so, identify and describe those businesses and specify percentage of ownership.

§ A.1.3 Other Information

§ A.1.3.1 How many years has your organization been in business?

§ A.1.3.2 How many full-time employees work for your organization?

§ A.1.3.3 List your North American Industry Classification System (NAICS) codes and titles. Specify which is your primary NAICS code.

§ A.1.3.4 Indicate whether your organization is certified as a governmentally recognized special business class, such as a minority business enterprise, woman business enterprise, service disabled veteran owned small business, woman owned small business, small business in a HUBZone, or a small disadvantaged business in the 8(a) Business Development Program. For each, identify the certifying authority and indicate jurisdictions to which such certification applies.

§ A.2 EXPERIENCE

§ A.2.1 Complete Exhibit D to describe up to four projects, either completed or in progress, that are representative of your organization's experience and capabilities.

§ A.2.2 State your organization's total dollar value of work currently under contract.

§ A.2.3 Of the amount stated in Section A.2.2, state the dollar value of work that remains to be completed:

§ A.2.4 State your organization's average annual dollar value of construction work performed during the last five years.

§ A.3 CAPABILITIES

§ A.3.1 List the categories of work that your organization typically self-performs.

§ A.3.2 Identify qualities, accreditations, services, skills, or personnel that you believe differentiate your organization from others.

§ A.3.3 Does your organization provide design collaboration or pre-construction services? If so, describe those services.

§ A.3.4 Does your organization use building information modeling (BIM)? If so, describe how your organization uses BIM and identify BIM software that your organization regularly uses.

§ A.3.5 Does your organization use a project management information system? If so, identify that system.

§ A.4 REFERENCES

§ A.4.1 Identify three client references:

(Insert name, organization, and contact information)

§ A.4.2 Identify three architect references:

(Insert name, organization, and contact information)

§ A.4.3 Identify one bank reference:

(Insert name, organization, and contact information)

§ A.4.4 Identify three subcontractor or other trade references:

(Insert name, organization, and contact information)



AIA[®]

Document A305[®] – 2020 Exhibit B

Financial and Performance Information

This Exhibit is part of the Contractor’s Qualification Statement, submitted by _____ and dated the _____ day of _____ in the year _____
(In words, indicate day, month and year.)

§ B.1 FINANCIAL

§ B.1.1 Federal tax identification number:

§ B.1.2 Attach financial statements for the last three years prepared in accordance with Generally Accepted Accounting Principles, including your organization’s latest balance sheet and income statement. Also, indicate the name and contact information of the firm that prepared each financial statement.

§ B.1.3 Has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, been the subject of any bankruptcy proceeding within the last ten years?

§ B.1.4 Identify your organization’s preferred credit rating agency and identification information.

(Identify rating agency, such as Dun and Bradstreet or Equifax, and insert your organization’s identification number or other method of searching your organization’s credit rating with such agency.)

§ B.2 DISPUTES AND DISCIPLINARY ACTIONS

§ B.2.1 Are there any pending or outstanding judgments, arbitration proceedings, bond claims, or lawsuits against your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A, Section 1.2, in which the amount in dispute is more than \$75,000?

(If the answer is yes, provide an explanation.)

§ B.2.2 In the last five years has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management:

(If the answer to any of the questions below is yes, provide an explanation.)

.1 failed to complete work awarded to it?

.2 been terminated for any reason except for an owners’ convenience?

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

.3 had any judgments, settlements, or awards pertaining to a construction project in which your organization was responsible for more than \$75,000?

.4 filed any lawsuits or requested arbitration regarding a construction project?

§ B.2.3 In the last five years, has your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management; or any of the individuals listed in Exhibit A Section 1.2:

(If the answer to any of the questions below is yes, provide an explanation.)

.1 been convicted of, or indicted for, a business-related crime?

.2 had any business or professional license subjected to disciplinary action?

.3 been penalized or fined by a state or federal environmental agency?



AIA[®]

Document A305[®] – 2020 Exhibit C

Project Specific Information

This Exhibit is part of the Contractor’s Qualification Statement, submitted by _____ and dated the _____ day of _____ in the year _____
(In words, indicate day, month and year.)

PROJECT:

(Name and location or address.)

Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806

CONTRACTOR’S PROJECT OFFICE:

(Identify the office out of which the contractor proposes to perform the work for the Project.)

TYPE OF WORK SOUGHT

(Indicate the type of work you are seeking for this Project, such as general contracting, construction manager as constructor, design-build, HVAC subcontracting, electrical subcontracting, plumbing subcontracting, etc.)

CONFLICT OF INTEREST

Describe any conflict of interest your organization, its parent, or a subsidiary, affiliate, or other entity having common ownership or management, or any of the individuals listed in Exhibit A Section 1.2, may have regarding this Project.

§ C.1 PERFORMANCE OF THE WORK

§ C.1.1 When was the Contractor’s Project Office established?

§ C.1.2 How many full-time field and office staff are respectively employed at the Contractor’s Project Office?

§ C.1.3 List the business license and contractor license or registration numbers for the Contractor’s Project Office that pertain to the Project.

§ C.1.4 Identify key personnel from your organization who will be meaningfully involved with work on this Project and indicate (1) their position on the Project team, (2) their office location, (3) their expertise and experience, and (4) projects similar to the Project on which they have worked.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

§ C.1.5 Identify portions of work that you intend to self-perform on this Project.

§ C.1.6 To the extent known, list the subcontractors you intend to use for major portions of work on the Project.

§ C.2 EXPERIENCE RELATED TO THE PROJECT

§ C.2.1 Complete Exhibit D to describe up to four projects performed by the Contractor's Project Office, either completed or in progress, that are relevant to this Project, such as projects in a similar geographic area or of similar project type. If you have already completed Exhibit D, but want to provide further examples of projects that are relevant to this Project, you may complete Exhibit E.

§ C.2.2 State the total dollar value of work currently under contract at the Contractor's Project Office:

§ C.2.3 Of the amount stated in Section C.2.2, state the dollar value of work that remains to be completed:

§ C.2.4 State the average annual dollar value of construction work performed by the Contractor's Project Office during the last five years.

§ C.2.5 List the total number of projects the Contractor's Project Office has completed in the last five years and state the dollar value of the largest contract the Contractor's Project Office has completed during that time.

§ C.3 SAFETY PROGRAM AND RECORD

§ C.3.1 Does the Contractor's Project Office have a written safety program?

§ C.3.2 List all safety-related citations and penalties the Contractor's Project Office has received in the last three years.

§ C.3.3 Attach the Contractor's Project Office's OSHA 300a Summary of Work-Related Injuries and Illnesses form for the last three years.

§ C.3.4 Attach a copy of your insurance agent's verification letter for your organization's current workers' compensation experience modification rate and rates for the last three years.

§ C.4 INSURANCE

§ C.4.1 Attach current certificates of insurance for your commercial general liability policy, umbrella insurance policy, and professional liability insurance policy, if any. Identify deductibles or self-insured retentions for your commercial general liability policy.

§ C.4.2 If requested, will your organization be able to provide property insurance for the Project written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis?

§ C.4.3 Does your commercial general liability policy contain any exclusions or restrictions of coverage that are prohibited in AIA Document A101-2017, Exhibit A, Insurance A.3.2.2.2? If so, identify.

§ C.5 SURETY

§ C.5.1 If requested, will your organization be able to provide a performance and payment bond for this Project?

§ C.5.2 Surety company name:

§ C.5.3 Surety agent name and contact information:

§ C.5.4 Total bonding capacity:

§ C.5.5 Available bonding capacity as of the date of this qualification statement:

CUSTOMER REFERENCE LISTING

Provide the name of all service contracts with comparable complexity and value that have been performed during the previous five years, including, but not limited to public works projects. Copy form as needed.

ORGANIZATION

Owners Name & Address	Contact Name & Telephone	Dates: Started - Completed	Total Project Cost
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Project Description

ORGANIZATION

Owners Name & Address	Contact Name & Telephone	Dates: Started - Completed	Total Project Cost
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Project Description

ORGANIZATION

Owners Name & Address	Contact Name & Telephone	Dates: Started - Completed	Total Project Cost

Project Description

ORGANIZATION

Owners Name & Address	Contact Name & Telephone	Dates: Started - Completed	Total Project Cost

Project Description

 **AIA** Document A310™ – 2010**Bid Bond****CONTRACTOR:***(Name, legal status and address)***SURETY:***(Name, legal status and principal place of business)***OWNER:***(Name, legal status and address)*ERC / 2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806**BOND AMOUNT: \$****PROJECT:***(Name, location or address, and Project number, if any)*Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

Signed and sealed this day of ,

(Witness)

(Witness)

(Contractor as Principal)

(Seal)

(Title)

(Surety)

(Seal)

(Title)



Init.

/

User Notes:

(3B9ADA4C)



AIA[®]

Document A312[®] – 2010

Payment Bond

CONTRACTOR:

(Name, legal status and address)

SURETY:

(Name, legal status and principal place of business)

OWNER:

(Name, legal status and address)

ERC / 2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806

CONSTRUCTION CONTRACT

Date:

Amount: \$

Description:

(Name and location)

Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806

BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

None

See Section 18

CONTRACTOR AS PRINCIPAL

Company: *(Corporate Seal)*

Signature:

SURETY

Company: *(Corporate Seal)*

Signature:

Name and

Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____ *(Corporate Seal)*

Signature: _____

Name and Title: _____

Address: _____

SURETY

Company: _____ *(Corporate Seal)*

Signature: _____

Name and Title: _____

Address: _____

 **AIA** Document A312[®] – 2010**Performance Bond****CONTRACTOR:***(Name, legal status and address)***SURETY:***(Name, legal status and principal place of business)***OWNER:***(Name, legal status and address)*ERC/2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806**CONSTRUCTION CONTRACT**

Date:

Amount: \$

Description:

*(Name and location)*Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806**BOND**

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

None

See Section 16

CONTRACTOR AS PRINCIPALCompany: *(Corporate Seal)*

Signature: _____

Name and

Title:

*(Any additional signatures appear on the last page of this Performance Bond.)**(FOR INFORMATION ONLY — Name, address and telephone)***AGENT or BROKER:****SURETY**Company: *(Corporate Seal)*

Signature: _____

Name and

Title:

OWNER'S REPRESENTATIVE:*(Architect, Engineer or other party:)***ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

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

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1** the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2** the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3** the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

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

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

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

- .1** After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2** Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

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

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

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

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL

Company: _____ *(Corporate Seal)*
Signature: _____

Name and Title: _____
Address: _____

SURETY

Company: _____ *(Corporate Seal)*
Signature: _____

Name and Title: _____
Address: _____



 **AIA**® Document A101® – 2017**Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum**

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

ERC / 2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806

The Architect:
(Name, legal status, address and other information)

Architects McDonald, Soutar & Paz, Inc.
3575 Long Beach Blvd.
Long Beach, CA 90807

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

Init.

AIA Document A101 – 2017. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997, 2007 and 2017. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This document was produced by AIA software at 15:25:56 ET on 08/29/2023 under Order No.2114392697 which expires on 01/03/2024, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aicontracts.com.

User Notes:

(3B9ADA53)

TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

Federal Participation Disclosure - "This project will be partially funded with Federal funds from the United States Department of Commerce, Economic Development Administration and therefore is subject to the EDA contracting Provisions for Construction Projects, and Federal laws and regulations associated with that program.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

The date of this Agreement.

A date set forth in a notice to proceed issued by the Owner.

Established as follows:

(Insert a date or a means to determine the date of commencement of the Work.)

Owner shall cause the issuance of a written notice to proceed with the date of commencement fixed therein; provided, however, that if such notice to proceed has not been issued by _____, _____, this contract shall automatically terminate and the party shall have no further obligation or liability to each other.

Init.

AIA Document A101 – 2017. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997, 2007 and 2017. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This document was produced at 15:25:56 ET on 08/29/2023 under Order No.2114392697 which expires on 01/03/2024, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.

User Notes:

(3B9ADA53)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

Not later than Two Hundred Ten (210) calendar days from the date of commencement of the Work.

By the following date:

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
-----------------	-----------------------------

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
------	-------

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement. *(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)*

Item	Price	Conditions for Acceptance
------	-------	---------------------------

§ 4.3 Allowances, if any, included in the Contract Sum: *(Identify each allowance.)*

Item	Price
------	-------

§ 4.4 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit (\$0.00)
------	-----------------------	-------------------------

§ 4.5 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

Time is of the essence to the Contract Documents and all obligations thereunder. The Contractor acknowledges and recognizes that the Owner is entitled to full and beneficial occupancy and use of the completed Work following expiration of the Contract Time.

The Contractor further acknowledges and agrees that if the Contractor fails to complete substantially, or cause Substantial Completion of any portion of the Work within the Contract Time, the Owner will sustain extensive damages and serious loss as a result of such failure.

The exact amount of such damages will be extremely difficult to ascertain. Therefore, the Owner and the Contractor agree that if the Contractor fails to achieve Substantial Completion of the Work within 7 Months from the date of commencement,

Owner shall be entitled to retain or recover from Contractor, as liquidated damages and not as a penalty, **\$500.00** per day commencing upon the first day following expiration of such timeframe and continuing until the actual date of Substantial Completion.

Such liquidated damages are hereby agreed to be a reasonable pre-estimate of damages the Owner will incur as a result of delayed completion of the Work.

The Owner may deduct liquidated damages prescribed in this paragraph from any unpaid amounts then or thereafter due the Contractor under this Agreement and any liquidated damages not so deducted shall be payable to the Owner by the Contractor upon demand by the Owner plus interest from the date of demand at the legal rate. »

Time is of the essence to the Contract Documents »

§ 4.6 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.4.1 Each Application for Payment shall include applicable WH-347 forms for each weekly payroll along with a Department of Labor Statement of Compliance.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and
- .3 That portion of Construction Change Directives that the Architect determines, in the Architect’s professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and
- .5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

Ten Percent (10%)

§ 5.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage upon Substantial Completion.)

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner’s prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor’s responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner’s final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect’s final Certificate for Payment, or as follows:

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

6.00 % per annum

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

Arbitration pursuant to Section 15.4 of AIA Document A201–2017

Litigation in a court of competent jurisdiction

Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner’s convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:

Init.

(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 8.7 Other provisions:

§ 8.8 The Contractor represents and warrants the following to the Owner (in addition to any other representations and warranties contained in the Contract Documents) as an inducement to the Owner to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement, any termination of

Init.

AIA Document A101 – 2017. Copyright © 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1967, 1974, 1977, 1987, 1991, 1997, 2007 and 2017. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This document was produced at 15:25:56 ET on 08/29/2023 under Order No.2114392697 which expires on 01/03/2024, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.

User Notes:

(3B9ADA53)

this Agreement and the final completion of the Work: (1) That it and its subcontractors are financially solvent, able to pay all debts as they mature and possessed of sufficient working capital to complete the Work and perform all obligations hereunder; (2) That it is able to furnish the plant, tools, materials, supplies, equipment and labor required to complete the Work and perform its obligations hereunder; (3) That it is authorized to do business in the California and is properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over it and over the Work and the Project; (4) That its execution of this Agreement and its performance thereof is within its duly authorized power; (5) That its duly authorized representative has visited the site of the Project, is familiar with the local and special conditions under which Work is to be performed and has correlated onsite observations with the requirements of the Contract Documents; and (6) That it possesses a high level of experience and expertise in the business administration, construction, construction management and superintendents of projects of the size, complexity and nature of this particular Project, and that it will perform the Work with the care, skill and diligence of such a Contractor.

§8.9 The partial or complete invalidity of any one or more provisions of this Agreement shall not affect the validity or continuing force and effect of any other provision. The failure of either party hereto to insist, in any one or more instances, upon the performance of any of the terms, covenants or conditions of this Agreement, or to exercise any right herein, shall not be construed as a waiver or relinquishment of such term, covenant, condition or right as respects further performance.

§8.10 Contractor shall reimburse Owner for all of Owner’s attorney’s fees, court costs and other expenses incurred in enforcing or declaring the Contractor’s obligations under this Agreement, incurred in exercising and right or remedy hereunder or under law or equity in event of a default by Contractor, or incurred in any litigation or arbitration in which Owner, without its fault, becomes involved by reason of the existence of this Agreement

§8.11 This Agreement is solely for the benefit of the signatories hereto and represents the entire and integrated Agreement between the parties hereto and supersedes all prior contemporaneous negotiations, representations, understandings or agreements, either written or oral. This Agreement shall not be modified except by a written instrument signed by the parties.

§8.12 Should inconsistencies or omissions appear in the Contract Documents, it shall be the duty of the Contractor to so notify the Owner in writing within three (3) working days of Contractor’s discovery thereof. Upon receipt of said notice, Owner shall instruct Contractor as to the measures to be taken and the Contractor shall comply with Owner’s instructions.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013 incorporated into this Agreement.)

.5 Drawings

Refer to City drawings dated _____

Number	Title	Date
--------	-------	------

.6 Specifications

Refer to Specifications dated August 08, 2023

Section	Title	Date	Pages
---------	-------	------	-------

.7 Addenda, if any:

Init.

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

The Sustainability Plan:

Title	Date	Pages
-------	------	-------

Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
----------	-------	------	-------

.9 Other documents, if any, listed below:

(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor’s bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

- City Approved Set of Plans Dated _____
- A201-2017
- Sample Bid Quotation From
- G705 Subs List Form
- Non-Collusion Form
- A305 Qualifications Statement
- Customer Reference Listing
- A310 Bid Bond
- A312 Bid Payment Bond
- A312 Bid Performance Bond
- Insurance Requirements Form
- Insurance Instructions
- Supplemental Conditions to the A201-2017
- EDA Contracting Provisions for Construction Projects
- Current Prevailing Davis-Bacon Wage Rate
- Determination EDA "Notice of Requirements for Affirmative Action"
- Lobbying Restriction Form (CD 512)
- SPC_V1 Project Manual
- Soils Report
- Material Hazard Report

Init.

User Notes:

This Agreement entered into as of the day and year first written above.

OWNER *(Signature)*

(Printed name and title)

CONTRACTOR *(Signature)*

(Printed name and title)



Init.

/



AIA Document A101® – 2017 Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the day of in the year
(In words, indicate day, month and year.)

for the following **PROJECT**:
(Name and location or address)

Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806

THE OWNER:
(Name, legal status and address)

ERC / 2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806

THE CONTRACTOR:
(Name, legal status and address)

TABLE OF ARTICLES

A.1 GENERAL

A.2 OWNER'S INSURANCE

A.3 CONTRACTOR'S INSURANCE AND BONDS

A.4 SPECIAL TERMS AND CONDITIONS

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201®–2017, General Conditions of the Contract for Construction. Article 11 of A201®–2017 contains additional insurance provisions.

§ A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss	Sub-Limit
----------------	-----------

§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit
----------	-----------

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to

Init.

the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

- § **A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.

- § **A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.

- § **A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.

- § **A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.

- § **A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.

- § **A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.

- § **A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

- § **A.2.5.1 Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information.
(Indicate applicable limits of coverage or other conditions in the fill point below.)

[] § A.2.5.2 Other Insurance

(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than One Million (\$ 1,000,000) each occurrence, Two Million (\$ 2,000,000) general aggregate, and (\$) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than One Million (\$ 1,000,000) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than One Million (\$ 1,000,000) each accident, One Million (\$ 1,000,000) each employee, and One Million (\$ 1,000,000) policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

§ A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below: *(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

§ A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than (\$) per claim and (\$) in the aggregate, for Work within fifty (50) feet of railroad property.

§ A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than (\$) per claim and (\$) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

§ A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

§ A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

§ A.3.3.2.6 Other Insurance
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage

Limits

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:

(Specify type and penal sum of bonds.)

Type

Penal Sum (\$0.00)

Payment Bond

Performance Bond

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:



Init.

/

AIA Document A101 – 2017 Exhibit A. Copyright © 2017. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This document was produced at 15:10:40 ET on 08/29/2023 under Order No.2114392697 which expires on 01/03/2024, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.

User Notes:

(3B9ADA46)

INSURANCE REQUIREMENT FORM

INSURED: _____

DATE: _____

AGREEMENT/REFERENCE NO.:

2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806

The following coverages and limits noted below are required,

CERT./END./LOSS PAYEE	MINIMUM COMBINED SINGLE LIMITS																																																																				
<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; text-align: center; border-right: 1px solid black;"><input checked="" type="checkbox"/></td> <td style="width: 10%; border-right: 1px solid black;"></td> <td style="width: 80%;">Workers' Compensation</td> <td style="width: 10%;"></td> </tr> </table>	<input checked="" type="checkbox"/>		Workers' Compensation		Insured - Statutory																																																																
<input checked="" type="checkbox"/>		Workers' Compensation																																																																			
<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; text-align: center; border-right: 1px solid black;"><input checked="" type="checkbox"/></td> <td style="width: 10%; border-right: 1px solid black;"></td> <td style="width: 80%;">Employer's Liability</td> <td style="width: 10%;"></td> </tr> <tr> <td></td> <td></td> <td>(X) Broad Form All States Endorsement</td> <td></td> </tr> <tr> <td></td> <td></td> <td>() Longshore and Harbor Workers' Compensation Act Endorsement</td> <td></td> </tr> <tr> <td></td> <td></td> <td>() _____</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/>		Employer's Liability				(X) Broad Form All States Endorsement				() Longshore and Harbor Workers' Compensation Act Endorsement				() _____		<u>\$1,000,000</u>																																																				
<input checked="" type="checkbox"/>		Employer's Liability																																																																			
		(X) Broad Form All States Endorsement																																																																			
		() Longshore and Harbor Workers' Compensation Act Endorsement																																																																			
		() _____																																																																			
<table border="0" style="width: 100%;"> <tr> <td style="width: 10%; text-align: center; border-right: 1px solid black;"><input checked="" type="checkbox"/></td> <td style="width: 10%; border-right: 1px solid black;"></td> <td style="width: 80%;">ISO Commercial General Liability Coverage Form</td> <td style="width: 10%;"></td> </tr> <tr> <td></td> <td></td> <td>("occurrence" form CG 00 01)</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Premises and Operations</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Contractual Liability</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Independent Contractors</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Products/Completed Operations</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Broad Form Property Damage</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Personal Injury</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Broad Form Liability Endorsement</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Fire Legal Liability</td> <td></td> </tr> <tr> <td></td> <td></td> <td>() Watercraft Liability</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Medical Expense</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Explosion Hazard</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Collapse Hazard</td> <td></td> </tr> <tr> <td></td> <td></td> <td>(X) Underground Hazard</td> <td></td> </tr> <tr> <td></td> <td></td> <td>() Garagekeeper's Legal Liability</td> <td></td> </tr> <tr> <td></td> <td></td> <td>() Hangarkeeper's Legal Liability</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/>		ISO Commercial General Liability Coverage Form				("occurrence" form CG 00 01)				(X) Premises and Operations				(X) Contractual Liability				(X) Independent Contractors				(X) Products/Completed Operations				(X) Broad Form Property Damage				(X) Personal Injury				(X) Broad Form Liability Endorsement				(X) Fire Legal Liability				() Watercraft Liability				(X) Medical Expense				(X) Explosion Hazard				(X) Collapse Hazard				(X) Underground Hazard				() Garagekeeper's Legal Liability				() Hangarkeeper's Legal Liability		<u>\$1,000,000</u>
<input checked="" type="checkbox"/>		ISO Commercial General Liability Coverage Form																																																																			
		("occurrence" form CG 00 01)																																																																			
		(X) Premises and Operations																																																																			
		(X) Contractual Liability																																																																			
		(X) Independent Contractors																																																																			
		(X) Products/Completed Operations																																																																			
		(X) Broad Form Property Damage																																																																			
		(X) Personal Injury																																																																			
		(X) Broad Form Liability Endorsement																																																																			
		(X) Fire Legal Liability																																																																			
		() Watercraft Liability																																																																			
		(X) Medical Expense																																																																			
		(X) Explosion Hazard																																																																			
		(X) Collapse Hazard																																																																			
		(X) Underground Hazard																																																																			
		() Garagekeeper's Legal Liability																																																																			
		() Hangarkeeper's Legal Liability																																																																			

CERT./END./LOSS PAYEE

MINIMUM COMBINED
SINGLE LIMITS

X			ISO Business Automobile Liability Coverage Form	<u>\$1,000,000</u>
---	--	--	---	--------------------

No. CA 00 01

- Owned Automobiles
- Non-owned Automobiles
- Hired Automobiles

			Aviation/Airport Liability	\$ _____
--	--	--	----------------------------	----------

			Professional Liability	\$ _____
--	--	--	------------------------	----------

X		X	ISO Commercial Building and Personal	<u>Replacement Cost</u>
---	--	---	--------------------------------------	-------------------------

Property Coverage Form (CP 00 10)

- Extended Coverage
- Vandalism & Malicious Mischief
- Flood
- Earthquake
- Debris Removal
- Sprinkler Leakage
- All Risk (ISO Cause of Loss Form Special Form CP 10 30)
- Builder's Risk Coverage Form (CP 00 20)
- Other _____

			Ocean Marine	\$ _____
--	--	--	--------------	----------

Protection & Indemnity
 Charter's Legal Liability _____
 Cargo
 Jones Act

INSTRUCTIONS FOR COMPLETING, EXECUTING AND
SUBMITTING EVIDENCE OF INSURANCE

INSURED: _____ DATE: _____

AGREEMENT/REFERENCE NO.:

1. INSURED

- a. In order to reduce problems and time delays in providing evidence of insurance to the **2299 Pacific Avenue LLC**, you are requested to give your insurance agent or broker a copy of the captioned agreement along with these instructions and endorsement forms for completing, executing, and submitting evidence of insurance.
- b. All questions relating to insurance should be directed as indicated below.

2. INSURANCE AGENT OR BROKER

- a. The appropriate endorsement form shall be used where required. No changes in the terms or conditions of the endorsement forms will be permitted. Certificates of Insurance alone will not be accepted by the 2299 PACIFIC AVENUE LLC
- b. The name of the insurance company underwriting coverage and its address shall be noted on the endorsement form.
- c. The coverages and limits for each type of insurance are specified in the agreement.
- d. You shall have an authorized representative of the underwriting insurance company sign the completed endorsement form and transmit the forms as indicated below. Signatures must be originals. Facsimile (rubber stamp, photocopy, etc.) or initialed signatures are not acceptable.
- e. The endorsement form shall include reference to the activity and/or to either the specific contract number.
- f. Endorsements to excess policies will be required when primary insurance is insufficient in complying with the contract requirements.
- g. Improperly completed endorsements will be returned to your insured for correction by an authorized representative of the insurance company.
- h. Delay in submitting properly completed endorsement forms may delay your insured's intended occupancy or operation under agreement with the 2299 PACIFIC AVENUE LLC

- i. Completed endorsement(s) and questions relating to the required insurance are to be directed to:

2299 Pacific Avenue LLC
2600 Industry Way
Lynwood, CA 90806

Insurance shall issue certificates with the following additional insured: The Architect/Engineer and/or other Client's consultants.



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Commercial Building to Childcare Facility
2299 Pacific Avenue, Long Beach, CA 90806

THE OWNER:

(Name, legal status and address)

ERC / 2299 Pacific Avenue LLC
2600 Industry Way Lynwood, CA 90806

THE ARCHITECT:

(Name, legal status and address)

Architects McDonald, Soutar & Paz, Inc.
3575 Long Beach Blvd.
Long Beach, CA 90807

TABLE OF ARTICLES

- 1 GENERAL PROVISIONS
- 2 OWNER
- 3 CONTRACTOR
- 4 ARCHITECT
- 5 SUBCONTRACTORS
- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
- 7 CHANGES IN THE WORK
- 8 TIME
- 9 PAYMENTS AND COMPLETION
- 10 PROTECTION OF PERSONS AND PROPERTY
- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT
- 15 CLAIMS AND DISPUTES

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

Init.

AIA Document A201 – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This document was produced by AIA software at 18:05:29 ET on 08/24/2023 under Order No.2114392697 which expires on 01/03/2024, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aicontracts.com.

User Notes:

(3B9ADA50)

INDEX

(Topics and numbers in bold are Section headings.)

Acceptance of Nonconforming Work
9.6.6, 9.9.3, 12.3
Acceptance of Work
9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3
Access to Work
3.16, 6.2.1, 12.1
Accident Prevention
10
Acts and Omissions
3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5,
10.2.8, 13.3.2, 14.1, 15.1.2, 15.2
Addenda
1.1.1
Additional Costs, Claims for
3.7.4, 3.7.5, 10.3.2, 15.1.5
Additional Inspections and Testing
9.4.2, 9.8.3, 12.2.1, 13.4
Additional Time, Claims for
3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, 15.1.6
Administration of the Contract
3.1.3, 4.2, 9.4, 9.5
Advertisement or Invitation to Bid
1.1.1
Aesthetic Effect
4.2.13
Allowances
3.8
Applications for Payment
4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10
Approvals
2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9,
3.12.10.1, 4.2.7, 9.3.2, 13.4.1
Arbitration
8.3.1, 15.3.2, 15.4
ARCHITECT
4
Architect, Definition of
4.1.1
Architect, Extent of Authority
2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2,
9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1,
13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1
Architect, Limitations of Authority and
Responsibility
2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2,
4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4,
9.4.2, 9.5.4, 9.6.4, 15.1.4, 15.2
Architect's Additional Services and Expenses
2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4
Architect's Administration of the Contract
3.1.3, 3.7.4, 15.2, 9.4.1, 9.5
Architect's Approvals

2.5, 3.1.3, 3.5, 3.10.2, 4.2.7
Architect's Authority to Reject Work
3.5, 4.2.6, 12.1.2, 12.2.1
Architect's Copyright
1.1.7, 1.5
Architect's Decisions
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3,
7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1,
13.4.2, 15.2
Architect's Inspections
3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4
Architect's Instructions
3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2
Architect's Interpretations
4.2.11, 4.2.12
Architect's Project Representative
4.2.10
Architect's Relationship with Contractor
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2,
3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16,
3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5,
9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2
Architect's Relationship with Subcontractors
1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3
Architect's Representations
9.4.2, 9.5.1, 9.10.1
Architect's Site Visits
3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4
Asbestos
10.3.1
Attorneys' Fees
3.18.1, 9.6.8, 9.10.2, 10.3.3
Award of Separate Contracts
6.1.1, 6.1.2
Award of Subcontracts and Other Contracts for
Portions of the Work
5.2
Basic Definitions
1.1
Bidding Requirements
1.1.1
Binding Dispute Resolution
8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5,
15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1
Bonds, Lien
7.3.4.4, 9.6.8, 9.10.2, 9.10.3
Bonds, Performance, and Payment
7.3.4.4, 9.6.7, 9.10.3, 11.1.2, 11.1.3, 11.5
Building Information Models Use and Reliance
1.8
Building Permit
3.7.1
Capitalization
1.3
Certificate of Substantial Completion
9.8.3, 9.8.4, 9.8.5

Init.

/

AIA Document A201 – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This document was produced at 18:05:29 ET on 08/24/2023 under Order No.2114392697 which expires on 01/03/2024, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.

User Notes:

(3B9ADA50)

Certificates for Payment
4.2.1, 4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7,
9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4
Certificates of Inspection, Testing or Approval
13.4.4
Certificates of Insurance
9.10.2
Change Orders
1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3,
7.1.2, 7.1.3, 7.2, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1,
9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2
Change Orders, Definition of
7.2.1
CHANGES IN THE WORK
2.2.2, 3.11, 4.2.8, 7, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1,
11.5
Claims, Definition of
15.1.1
Claims, Notice of
1.6.2, 15.1.3
CLAIMS AND DISPUTES
3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, 15, 15.4
Claims and Timely Assertion of Claims
15.4.1
Claims for Additional Cost
3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, 15.1.5
Claims for Additional Time
3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, 15.1.6
Concealed or Unknown Conditions, Claims for
3.7.4
Claims for Damages
3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3,
11.3.2, 14.2.4, 15.1.7
Claims Subject to Arbitration
15.4.1
Cleaning Up
3.15, 6.3
Commencement of the Work, Conditions Relating to
2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3,
6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, 15.1.5
Commencement of the Work, Definition of
8.1.2
Communications
3.9.1, 4.2.4
Completion, Conditions Relating to
3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1,
9.10, 12.2, 14.1.2, 15.1.2
COMPLETION, PAYMENTS AND
9
Completion, Substantial
3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1,
9.10.3, 12.2, 15.1.2
Compliance with Laws
2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2,
13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3,
15.2.8, 15.4.2, 15.4.3
Concealed or Unknown Conditions

3.7.4, 4.2.8, 8.3.1, 10.3
Conditions of the Contract
1.1.1, 6.1.1, 6.1.4
Consent, Written
3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2,
15.4.4.2
Consolidation or Joinder
15.4.4
CONSTRUCTION BY OWNER OR BY
SEPARATE CONTRACTORS
1.1.4, 6
Construction Change Directive, Definition of
7.3.1
Construction Change Directives
1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3,
7.3, 9.3.1.1
Construction Schedules, Contractor's
3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2
Contingent Assignment of Subcontracts
5.4, 14.2.2.2
Continuing Contract Performance
15.1.4
Contract, Definition of
1.1.2
CONTRACT, TERMINATION OR SUSPENSION
OF THE
5.4.1.1, 5.4.2, 11.5, 14
Contract Administration
3.1.3, 4, 9.4, 9.5
Contract Award and Execution, Conditions Relating
to
3.7.1, 3.10, 5.2, 6.1
Contract Documents, Copies Furnished and Use of
1.5.2, 2.3.6, 5.3
Contract Documents, Definition of
1.1.1
Contract Sum
2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4,
9.1, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2,
12.3, 14.2.4, 14.3.2, 15.1.4.2, 15.1.5, 15.2.5
Contract Sum, Definition of
9.1
Contract Time
1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5,
7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7, 7.3.10, 7.4, 8.1.1,
8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2,
14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5
Contract Time, Definition of
8.1.1
CONTRACTOR
3
Contractor, Definition of
3.1, 6.1.2
Contractor's Construction and Submittal Schedules
3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6.2
Contractor's Employees

2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6,
10.2, 10.3, 11.3, 14.1, 14.2.1.1
Contractor's Liability Insurance
11.1
Contractor's Relationship with Separate Contractors
and Owner's Forces
3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4
Contractor's Relationship with Subcontractors
1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2,
9.6.7, 9.10.2, 11.2, 11.3, 11.4
Contractor's Relationship with the Architect
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2,
3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2,
6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6,
10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1
Contractor's Representations
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2
Contractor's Responsibility for Those Performing the
Work
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8
Contractor's Review of Contract Documents
3.2
Contractor's Right to Stop the Work
2.2.2, 9.7
Contractor's Right to Terminate the Contract
14.1
Contractor's Submittals
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2,
9.8.3, 9.9.1, 9.10.2, 9.10.3
Contractor's Superintendent
3.9, 10.2.6
Contractor's Supervision and Construction
Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4,
7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4
Coordination and Correlation
1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1
Copies Furnished of Drawings and Specifications
1.5, 2.3.6, 3.11
Copyrights
1.5, 3.17
Correction of Work
2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, 12.2, 12.3,
15.1.3.1, 15.1.3.2, 15.2.1
Correlation and Intent of the Contract Documents
1.2
Cost, Definition of
7.3.4
Costs
2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3,
7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6,
11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14
Cutting and Patching
3.14, 6.2.5
Damage to Construction of Owner or Separate
Contractors
3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4

Damage to the Work
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4
Damages, Claims for
3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2,
11.3, 14.2.4, 15.1.7
Damages for Delay
6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2
Date of Commencement of the Work, Definition of
8.1.2
Date of Substantial Completion, Definition of
8.1.3
Day, Definition of
8.1.4
Decisions of the Architect
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4,
7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2,
14.2.2, 14.2.4, 15.1, 15.2
Decisions to Withhold Certification
9.4.1, 9.5, 9.7, 14.1.1.3
Defective or Nonconforming Work, Acceptance,
Rejection and Correction of
2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3,
9.10.4, 12.2.1
Definitions
1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1,
6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1
Delays and Extensions of Time
3.2, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7,
10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5
Digital Data Use and Transmission
1.7
Disputes
6.3, 7.3.9, 15.1, 15.2
Documents and Samples at the Site
3.11
Drawings, Definition of
1.1.5
Drawings and Specifications, Use and Ownership of
3.11
Effective Date of Insurance
8.2.2
Emergencies
10.4, 14.1.1.2, 15.1.5
Employees, Contractor's
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2,
10.3.3, 11.3, 14.1, 14.2.1.1
Equipment, Labor, or Materials
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,
4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3,
9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1,
3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1,
9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3.1, 15.1.4
Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2,
10.4, 14.3, 15.1.6, 15.2.5

Failure of Payment
 9.5.1.3, 9.7, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2
 Faulty Work
 (See Defective or Nonconforming Work)
 Final Completion and Final Payment
 4.2.1, 4.2.9, 9.8.2, 9.10, 12.3, 14.2.4, 14.4.3
 Financial Arrangements, Owner's
 2.2.1, 13.2.2, 14.1.1.4
GENERAL PROVISIONS
 1
 Governing Law
 13.1
 Guarantees (See Warranty)
 Hazardous Materials and Substances
 10.2.4, 10.3
 Identification of Subcontractors and Suppliers
 5.2.1
 Indemnification
 3.17, 3.18, 9.6.8, 9.10.2, 10.3.3, 11.3
 Information and Services Required of the Owner
 2.1.2, 2.2, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5,
 9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2,
 14.1.1.4, 14.1.4, 15.1.4
 Initial Decision
 15.2
 Initial Decision Maker, Definition of
 1.1.8
 Initial Decision Maker, Decisions
 14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
 Initial Decision Maker, Extent of Authority
 14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
 Injury or Damage to Person or Property
 10.2.8, 10.4
 Inspections
 3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,
 9.9.2, 9.10.1, 12.2.1, 13.4
 Instructions to Bidders
 1.1.1
 Instructions to the Contractor
 3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2
 Instruments of Service, Definition of
 1.1.7
 Insurance
 6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5,
 11
Insurance, Notice of Cancellation or Expiration
11.1.4, 11.2.3
 Insurance, Contractor's Liability
 11.1
 Insurance, Effective Date of
 8.2.2, 14.4.2
 Insurance, Owner's Liability
 11.2
 Insurance, Property
 10.2.5, 11.2, 11.4, 11.5
 Insurance, Stored Materials
 9.3.2

INSURANCE AND BONDS
 11
 Insurance Companies, Consent to Partial Occupancy
 9.9.1
 Insured loss, Adjustment and Settlement of
 11.5
 Intent of the Contract Documents
 1.2.1, 4.2.7, 4.2.12, 4.2.13
 Interest
 13.5
 Interpretation
 1.1.8, 1.2.3, 1.4, 4.1.1, 5.1, 6.1.2, 15.1.1
 Interpretations, Written
 4.2.11, 4.2.12
 Judgment on Final Award
 15.4.2
 Labor and Materials, Equipment
 1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,
 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1,
 10.2.4, 14.2.1.1, 14.2.1.2
 Labor Disputes
 8.3.1
 Laws and Regulations
 1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4,
 9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8,
 15.4
 Liens
 2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8
 Limitations, Statutes of
 12.2.5, 15.1.2, 15.4.1.1
 Limitations of Liability
 3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6,
 4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.6.8, 10.2.5, 10.3.3,
 11.3, 12.2.5, 13.3.1
 Limitations of Time
 2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7,
 5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,
 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15,
 15.1.2, 15.1.3, 15.1.5
 Materials, Hazardous
 10.2.4, 10.3
 Materials, Labor, Equipment and
 1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1,
 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2,
 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2
 Means, Methods, Techniques, Sequences and
 Procedures of Construction
 3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2
 Mechanic's Lien
 2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8
 Mediation
 8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, 15.3, 15.4.1,
 15.4.1.1
 Minor Changes in the Work
 1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, 7.4
MISCELLANEOUS PROVISIONS
 13

Modifications, Definition of
 1.1.1
 Modifications to the Contract
 1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7,
 10.3.2
 Mutual Responsibility
 6.2
 Nonconforming Work, Acceptance of
 9.6.6, 9.9.3, 12.3
 Nonconforming Work, Rejection and Correction of
 2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4,
 12.2
 Notice
 1.6, 1.6.1, 1.6.2, 2.1.2, 2.2.2., 2.2.3, 2.2.4, 2.5, 3.2.4,
 3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4,
 8.2.2, 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1,
 13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5,
 15.1.6, 15.4.1
 Notice of Cancellation or Expiration of Insurance
 11.1.4, 11.2.3
 Notice of Claims
 1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, 15.1.3, 15.1.5,
 15.1.6, 15.2.8, 15.3.2, 15.4.1
 Notice of Testing and Inspections
 13.4.1, 13.4.2
 Observations, Contractor's
 3.2, 3.7.4
 Occupancy
 2.3.1, 9.6.6, 9.8
 Orders, Written
 1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2,
 14.3.1
 OWNER
 2
 Owner, Definition of
 2.1.1
 Owner, Evidence of Financial Arrangements
 2.2, 13.2.2, 14.1.1.4
 Owner, Information and Services Required of the
 2.1.2, 2.2, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5,
 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1,
 13.4.2, 14.1.1.4, 14.1.4, 15.1.4
 Owner's Authority
 1.5, 2.1.1, 2.3.32.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2,
 4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1,
 7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2,
 10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4,
 15.2.7
 Owner's Insurance
 11.2
 Owner's Relationship with Subcontractors
 1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2
 Owner's Right to Carry Out the Work
 2.5, 14.2.2
 Owner's Right to Clean Up
 6.3
 Owner's Right to Perform Construction and to Award

Separate Contracts
 6.1
 Owner's Right to Stop the Work
 2.4
 Owner's Right to Suspend the Work
 14.3
 Owner's Right to Terminate the Contract
 14.2, 14.4
 Ownership and Use of Drawings, Specifications and
 Other Instruments of Service
 1.1.1, 1.1.6, 1.1.7, 1.5, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12,
 5.3
 Partial Occupancy or Use
 9.6.6, 9.9
 Patching, Cutting and
 3.14, 6.2.5
 Patents
 3.17
 Payment, Applications for
 4.2.5, 7.3.9, 9.2, 9.3, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1,
 14.2.3, 14.2.4, 14.4.3
 Payment, Certificates for
 4.2.5, 4.2.9, 9.3.3, 9.4, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1,
 9.10.3, 14.1.1.3, 14.2.4
 Payment, Failure of
 9.5.1.3, 9.7, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2
 Payment, Final
 4.2.1, 4.2.9, 9.10, 12.3, 14.2.4, 14.4.3
 Payment Bond, Performance Bond and
 7.3.4.4, 9.6.7, 9.10.3, 11.1.2
 Payments, Progress
 9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4
 PAYMENTS AND COMPLETION
 9
 Payments to Subcontractors
 5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2
 PCB
 10.3.1
 Performance Bond and Payment Bond
 7.3.4.4, 9.6.7, 9.10.3, 11.1.2
 Permits, Fees, Notices and Compliance with Laws
 2.3.1, 3.7, 3.13, 7.3.4.4, 10.2.2
 PERSONS AND PROPERTY, PROTECTION OF
 10
 Polychlorinated Biphenyl
 10.3.1
 Product Data, Definition of
 3.12.2
 Product Data and Samples, Shop Drawings
 3.11, 3.12, 4.2.7
 Progress and Completion
 4.2.2, 8.2, 9.8, 9.9.1, 14.1.4, 15.1.4
 Progress Payments
 9.3, 9.6, 9.8.5, 9.10.3, 14.2.3, 15.1.4
 Project, Definition of
 1.1.4
 Project Representatives

4.2.10
 Property Insurance
 10.2.5, 11.2
 Proposal Requirements
 1.1.1
 PROTECTION OF PERSONS AND PROPERTY
 10
 Regulations and Laws
 1.5, 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1,
 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14, 15.2.8,
 15.4
 Rejection of Work
 4.2.6, 12.2.1
 Releases and Waivers of Liens
 9.3.1, 9.10.2
 Representations
 3.2.1, 3.5, 3.12.6, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.10.1
 Representatives
 2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.10, 13.2.1
 Responsibility for Those Performing the Work
 3.3.2, 3.18, 4.2.2, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10
 Retainage
 9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3
 Review of Contract Documents and Field Conditions
 by Contractor
 3.2, 3.12.7, 6.1.3
 Review of Contractor's Submittals by Owner and
 Architect
 3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2
 Review of Shop Drawings, Product Data and
 Samples by Contractor
 3.12
 Rights and Remedies
 1.1.2, 2.4, 2.5, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1,
 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.1, 12.2.2,
 12.2.4, 13.3, 14, 15.4
 Royalties, Patents and Copyrights
 3.17
 Rules and Notices for Arbitration
 15.4.1
 Safety of Persons and Property
 10.2, 10.4
 Safety Precautions and Programs
 3.3.1, 4.2.2, 4.2.7, 5.3, 10.1, 10.2, 10.4
 Samples, Definition of
 3.12.3
 Samples, Shop Drawings, Product Data and
 3.11, 3.12, 4.2.7
 Samples at the Site, Documents and
 3.11
 Schedule of Values
 9.2, 9.3.1
 Schedules, Construction
 3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2
 Separate Contracts and Contractors
 1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2
 Separate Contractors, Definition of

6.1.1
 Shop Drawings, Definition of
 3.12.1
 Shop Drawings, Product Data and Samples
 3.11, 3.12, 4.2.7
 Site, Use of
 3.13, 6.1.1, 6.2.1
 Site Inspections
 3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4
 Site Visits, Architect's
 3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4
 Special Inspections and Testing
 4.2.6, 12.2.1, 13.4
 Specifications, Definition of
 1.1.6
 Specifications
 1.1.1, 1.1.6, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14
 Statute of Limitations
 15.1.2, 15.4.1.1
 Stopping the Work
 2.2.2, 2.4, 9.7, 10.3, 14.1
 Stored Materials
 6.2.1, 9.3.2, 10.2.1.2, 10.2.4
 Subcontractor, Definition of
 5.1.1
 SUBCONTRACTORS
 5
 Subcontractors, Work by
 1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4,
 9.3.1.2, 9.6.7
 Subcontractual Relations
 5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1
 Submittals
 3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3,
 9.8, 9.9.1, 9.10.2, 9.10.3
 Submittal Schedule
 3.10.2, 3.12.5, 4.2.7
 Subrogation, Waivers of
 6.1.1, 11.3
 Substances, Hazardous
 10.3
 Substantial Completion
 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3,
 12.2, 15.1.2
 Substantial Completion, Definition of
 9.8.1
 Substitution of Subcontractors
 5.2.3, 5.2.4
 Substitution of Architect
 2.3.3
 Substitutions of Materials
 3.4.2, 3.5, 7.3.8
 Sub-subcontractor, Definition of
 5.1.2
 Subsurface Conditions
 3.7.4
 Successors and Assigns

13.2
Superintendent
3.9, 10.2.6
Supervision and Construction Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4,
7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4
Suppliers
1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6,
9.10.5, 14.2.1
Surety
5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2,
15.2.7
Surety, Consent of
9.8.5, 9.10.2, 9.10.3
Surveys
1.1.7, 2.3.4
Suspension by the Owner for Convenience
14.3
Suspension of the Work
3.7.5, 5.4.2, 14.3
Suspension or Termination of the Contract
5.4.1.1, 14
Taxes
3.6, 3.8.2.1, 7.3.4.4
Termination by the Contractor
14.1, 15.1.7
Termination by the Owner for Cause
5.4.1.1, 14.2, 15.1.7
Termination by the Owner for Convenience
14.4
Termination of the Architect
2.3.3
Termination of the Contractor Employment
14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT

14
Tests and Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3,
9.9.2, 9.10.1, 10.3.2, 12.2.1, 13.4
TIME
8
Time, Delays and Extensions of
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, 8.3, 9.5.1, 9.7,
10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5
Time Limits

2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2,
5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3,
9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14,
15.1.2, 15.1.3, 15.4
Time Limits on Claims
3.7.4, 10.2.8, 15.1.2, 15.1.3
Title to Work
9.3.2, 9.3.3
UNCOVERING AND CORRECTION OF WORK
12
Uncovering of Work
12.1
Unforeseen Conditions, Concealed or Unknown
3.7.4, 8.3.1, 10.3
Unit Prices
7.3.3.2, 9.1.2
Use of Documents
1.1.1, 1.5, 2.3.6, 3.12.6, 5.3
Use of Site
3.13, 6.1.1, 6.2.1
Values, Schedule of
9.2, 9.3.1
Waiver of Claims by the Architect
13.3.2
Waiver of Claims by the Contractor
9.10.5, 13.3.2, 15.1.7
Waiver of Claims by the Owner
9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, 15.1.7
Waiver of Consequential Damages
14.2.4, 15.1.7
Waiver of Liens
9.3, 9.10.2, 9.10.4
Waivers of Subrogation
6.1.1, 11.3
Warranty
3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2,
15.1.2
Weather Delays
8.3, 15.1.6.2
Work, Definition of
1.1.3
Written Consent
1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3,
13.2, 13.3.2, 15.4.4.2
Written Interpretations
4.2.11, 4.2.12
Written Orders
1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

Federal Participation Disclosure – This project will be partially funded with Federal funds from the United States Department of Commerce, Economic Development Administration and therefore is subject to the EDA Contracting Provisions for Construction Projects, and Federal laws and regulations associated with that program.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is

required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose “confidential” information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner’s control and relevant to the Contractor’s performance of the Work with reasonable promptness after receiving the Contractor’s written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner’s Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner’s Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner’s expenses and compensation for the Architect’s additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the

jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term “Contractor” means the Contractor or the Contractor’s authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor’s review is made in the Contractor’s capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor’s notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor’s best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor’s proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor’s employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. Davis-Bacon Act Compliance: Must provide provisions requiring compliance with the Davis-Bacon Act Supplement by DOL Regulation 29 CFR Part 5. This Project is subject to prevailing Davis-Bacon act.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in

construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of

Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed,

and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

7.3.4.1 Specific Profit and overhead for Change Orders

1. For work by its own organization, the Contractor may add the following percentages to approved Change Orders:

- | | |
|-----------------------------|------------------|
| a. Direct Labor | 20 Percent (20%) |
| b. Materials | 5 Percent (5%) |
| c. Equipment (owned/rented) | 5 Percent (5%) |

2. For all such work done by Subcontractors, such Subcontractor may add the same percentages as for the Contractor above to its actual net increase in costs for combined overhead and profit.

The contractor may add up to five percent (5%) of the Subcontractor's total for its combined overhead and

profit.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions

documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims,

security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings

against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or

expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 Contractor shall furnish a Payment bond and a Performance bond. Each bond is to be executed in a sum equal to one hundred percent (100%) of the contract price. All bonds must be executed by a corporate surety licensed to conduct business in the state of California and listed on Department of the Treasury Circular 570. Personal securities will not be accepted.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and

Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term “Claim” also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker’s decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor’s Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.



SUPPLEMENTARY GENERAL CONDITIONS

1. GENERAL

This section supplements the provisions contained in the General Conditions (A201). All applicable provisions contained in these Supplementary General Conditions are part of each section of the Specifications to the same force and effect as if wholly embodied therein.

2. MINIMUM CONTRACTOR QUALIFICATIONS

Contractor must show successful completion of similar projects in size (\$500,000 minimum construction cost). Indicate the projects in the "Customer Reference Listing" and provide (3) Owner references that will be able to confirm the completion of the projects as indicated.

3. INSPECTOR'S FIELD OFFICE: Inspector's office is not required for this project.

4. COMMENCEMENT AND COMPLETION OF WORK

The work shall be commenced on the date stated in the OWNER's Notice to the Contractor to Proceed, and shall be completed within **Two Hundred Ten (210) calendar days**.

5. LIQUIDATED DAMAGES

The agreed liquidated damages provision is **Five Hundred (\$500.00)** per calendar day.

6. NUMBER OF COPIES/DRAWINGS AND SPECIFICATIONS

No hard copies will be provided. Only PDF copies will be provided at request.

7. NUMBER OF COPIES OF CONTRACT DOCUMENTS

No Hard copies will be provided. Only pdf copy will be provided at request.

8. APPROVAL AND ORDERING MATERIALS AND EQUIPMENT

Within ten (10) days after execution of the contract, submit a list for approval indicating the purchase of all materials to be used on this project. Deliver to the Architect a name, description, and plate number and date of each order. Immediately notify the Architect of any inability to obtain suitable delivery of any material or equipment.

9. REQUIRED COMPLIANCE

All work shall comply with the requirements in Sect 4-338 of Title 24 CCR Part 1, and the latest edition of the Uniform Building Code.

10. ADDENDA AND CHANGE ORDERS

In addition to the requirements of the General Conditions, changes in plans and specifications made by addendum or change orders, in accordance with California Code of Regulations, or with the approval of the architect, addenda or change orders may be approved by the local jurisdiction.

SUPPLEMENTARY GENERAL CONDITIONS

11. RECORD DRAWINGS

The Contractor shall maintain at the site two (2) complete, up-to-date sets of "Record" drawings and specifications. All "Record Set" conditions shall be clearly and precisely indicated in these sets on a daily basis. Progress payments will be withheld for subcontract trades who do not have their "Record Drawings" current. At the conclusion of the job, the General Contractor and the appropriate Subcontractors shall jointly sign and date the "Record Set" drawings and specifications, and they shall be delivered to the Architect for the OWNER. In addition, the Contractor shall transfer all changes and "Record Set" information from the "Record Set" drawings to a complete set of construction drawing sepias provided by him for the transfer of information. All changes and "Record Sets" shall be shown by the Contractor in a clear and legible manner equal to the craftsmanship on the original construction drawings. These record construction drawing sepias shall also be delivered to the Architect prior to final payment.

12. APPLICATIONS FOR PROGRESS PAYMENTS

Application for Progress. On or before the fifth (5th) day of each calendar month during the progress of the Work, Contractor shall submit to the Architect an itemized Application for Progress Payment for operations completed in accordance with the Schedule of Values. Such application shall be notarized, if required, and supported by the following or such portion thereof as Architect requires:

- A. The amount paid to the date of the Application to the Contractor, to all its Subcontractors, and all others furnishing labor, material, or equipment for its Contract;
- B. The amount being requested under the Application for Payment by the Contractor on its own behalf and separately stating the amount requested on behalf of each of the Subcontractors and all others furnishing labor, material, and equipment under the Contract;
- C. The balance that will be due to each of such entities after said payment is made;
- D. A certification that the Record Drawings and Annotated Specifications are current;
- E. Itemized breakdown of work done for the purpose of requesting partial payment;
- F. An updated construction schedule in conformance with Paragraph 3.8;
- G. The additions to and subtractions from the Contract Price and Contract Time;
- H. A summary of the retentions held;
- I. Material invoices, evidence of equipment purchases, rentals, and other support and details of cost as OWNER may require from time to time;
- J. The percentage of completion of the Contractor's Work by line item; and

SUPPLEMENTARY GENERAL CONDITIONS

K. An updated Schedule of Values from the preceding Application for Payment.

1. Prerequisites for Progress Payments.

a. First Payment Request. The following items, if applicable, must be completed before the first payment request will be accepted for processing:

- 1) Installation of the Project sign, if applicable;
- 2) Receipt by Architect of submittals;
- 3) Installation of field office, if applicable;
- 4) Installation of temporary facilities and fencing;
- 5) Submission of Cost Breakdown;
- 6) Preliminary schedule analysis, due within 10 days after Notice to Proceed;
- 7) Contractor's Construction Schedule
- 8) Schedule of unit prices, if applicable;
- 9) Submittal Schedule;
- 10) Copies of necessary permits;
- 11) Copies of authorizations and licenses from governing authorities;
- 12) Initial progress report;
- 13) Surveyor qualifications;
- 14) Written acceptance of OWNER's survey of rough grading, if applicable;
- 15) List of all subcontractors, with names, license numbers, telephone numbers, and scope of work;
- 16) All bonds and insurance endorsements; and
- 17) Resumes of General Contractor's Project Manager, and if applicable, job site Secretary, Record Documents Recorder, and job site Superintendent.

SUPPLEMENTARY GENERAL CONDITIONS

2. Second Payment Request. The second payment request will not be processed until all submittals and shop drawings have been accepted for review by the Architect.
3. All Payment Requests. No payment requests will be processed unless Contractor has submitted copies of the Certified Payroll records for the Work which correlates to the payment request. Each Application for Payment shall include applicable WH-347 forms for each weekly payroll along with a Department of Labor Statement of Compliance.
4. Any payments made to Contractor where criteria set forth in the above Paragraphs have not been met shall not constitute a waiver of said criteria by OWNER. Instead, such payment shall be construed as a good faith effort by OWNER to resolve differences so Contractor may pay its Subcontractors and suppliers and that Contractor agrees that failure to submit such items may constitute a breach of contract by Contractor and may subject Contractor to termination.

13. PROJECT FINAL

When the Contractor determines that the project is complete in every aspect and ready for a final inspection, the Contractor shall issue a letter to the Architect certifying that the project has been constructed in compliance with the Contract Documents and is now ready for a final inspection.

Such request shall carry the written endorsement of the Job Inspector. The work will be accepted and a Notice of Completion filed only after any defects which may be disclosed by such final inspection shall have been corrected.

14. CONDUCT OF CONSTRUCTION

The Contract drawings and specifications represent the finished work and the Architect's right to stop the work is limited thereto. The Architect will not be responsible for and will not have control or charge of construction means, methods, techniques, sequence or procedures, or for safety precautions and programs in connection with the work. The Architect will not be responsible for or have control or charge over the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any of the work.

15. REPAIR OF DAMAGE

Wherever existing improvements which are to remain are damaged by the work of the Contractor or by the occupancy of the site by the Contractor such damage shall be repaired to match pre-existing conditions as directed by the OWNER.

16. SUBMISSION SCHEDULE

The Contractor shall submit to the Architect required material for all items. Required written guarantees shall be executed on the OWNER's standard form and shall be submitted in duplicate.

SUPPLEMENTARY GENERAL CONDITIONS

17. ADDITIONAL INSURED

The insurance policies required of Contractor hereunder shall also name the OWNER, the lessor, the Architect and his consultants and the District Inspector as additional insureds as their interests may appear. Certificates of Insurance and the insurance policies required by the Contract Documents shall contain a provision that coverages afforded under such policies will not be canceled or allowed to expire until at least thirty (30) days prior written notice has been given to the District.

18. ADDITIONAL CONDITION

Contractor to provide in Base Bid cost for temporary power for construction.

19. Contractor to provide CONTRACTOR BOND & INSURANCE along with PW APPLICATION as required by City of Long Beach Public Work Department for OFFSITE WORK in the public right of way.

END OF SECTION

**U. S. DEPARTMENT OF COMMERCE
ECONOMIC DEVELOPMENT ADMINISTRATION**



**EDA CONTRACTING PROVISIONS
FOR CONSTRUCTION PROJECTS**

These EDA Contracting Provisions for Construction Projects (EDA Contracting Provisions) are intended for use by recipients receiving federal assistance from the U. S. Department of Commerce - Economic Development Administration (EDA). They contain provisions specific to EDA and other federal provisions not normally found in non-federal contract documents. The requirements contained herein must be incorporated into all construction contracts and subcontracts funded wholly or in part with federal assistance from EDA.

TABLE OF CONTENTS

1. Definitions
2. Applicability
3. Federally Required Contract Provisions
4. Required Provisions Deemed Inserted
5. Inspection by EDA Representatives
6. Examination and Retention of Contractor's Records
7. Construction Schedule and Periodic Estimates
8. Contractor's Title to Material
9. Inspection and Testing of Materials
10. "OR EQUAL" Clause
11. Patent Fees and Royalties
12. Claims for Extra Costs
13. Contractor's and Subcontractor's Insurance
14. Contract Security Bonds
15. Labor Standards - Davis-Bacon and Related Acts
16. Labor Standards - Contract Work Hours and Safety Standards Act
17. Equal Employment Opportunity
18. Contracting with Small, Minority and Women's Businesses
19. Health, Safety and Accident Prevention
20. Conflict of Interest and Other Prohibited Interests
21. New Restrictions on Lobbying
22. Historical and Archaeological Data Preservation
23. Clean Air and Water
24. Use of Lead-Based Paints on Residential Structures
25. Energy Efficiency
26. Environmental Requirements
27. Debarment, Suspension, Ineligibility and Voluntary Exclusions
28. EDA Project Sign
29. Buy America

1. **DEFINITIONS**

Agreement – The written instrument that is evidence of the agreement between the Owner and the Contractor overseeing the Work.

Architect/Engineer - The person or other entity engaged by the Recipient to perform architectural, engineering, design, and other services related to the work as provided for in the contract.

Contract – The entire and integrated written agreement between the Owner and the Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

Contract Documents – Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents.

Contractor – The individual or entity with whom the Owner has entered into the Agreement.

Drawings or Plans – That part of the Contract Documents prepared or approved by the Architect/Engineer that graphically shows the scope, extent, and character of the Work to be performed by the Contractor.

EDA - The United States of America acting through the Economic Development Administration of the U.S. Department of Commerce or any other person designated to act on its behalf. EDA has agreed to provide financial assistance to the Owner, which includes assistance in financing the Work to be performed under this Contract. Notwithstanding EDA's role, nothing in this Contract shall be construed to create any contractual relationship between the Contractor and EDA.

Owner – The individual or entity with whom the Contractor has entered into the Agreement and for whom the Work is to be performed.

Project – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

Recipient – A non-Federal entity receiving a Federal financial assistance award directly from EDA to carry out an activity under an EDA program, including any EDA-approved successor to the entity.

Specifications – That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.

Subcontractor – An individual or entity having direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

Work – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

2. **APPLICABILITY**

The Project to which the construction work covered by this Contract pertains is being assisted by the United States of America through federal assistance provided by the U.S. Department of Commerce - Economic Development Administration (EDA). Neither EDA, nor any of its departments, entities, or employees is a party to this Contract. The following EDA Contracting Provisions are included in this Contract and all subcontracts or related instruments pursuant to the provisions applicable to such federal assistance from EDA.

3. **FEDERALLY REQUIRED CONTRACT PROVISIONS**

(a) All contracts in excess of the simplified acquisition threshold - currently fixed at \$150,000 (*see* 41 U.S.C. §§ 134 and 1908) must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as may be appropriate.

(b) All contracts in excess of \$10,000 must address termination for cause and for convenience by the Recipient including the manner by which it will be effected and the basis for settlement.

(c) All construction contracts awarded in excess of \$10,000 by recipients of federal assistance and their contractors or subcontractors shall contain a provision requiring compliance with Executive Order 11246 of September 24, 1965, *Equal Employment Opportunity*, as amended by Executive Order 11375 of October 13, 1967, and Department of Labor implementing regulations at 41 C.F.R. part 60.

(d) All prime construction contracts in excess of \$2,000 awarded by Recipients must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141-3148) as supplemented by Department of Labor regulations at 29 C.F.R. part 5. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. § 874 and 40 U.S.C. § 3145) as supplemented by Department of Labor regulations at 29 C.F.R. part 3.

(e) All contracts awarded by the Recipient in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704 (the Contract Work Hours and Safety Standards Act) as supplemented by Department of Labor regulations at 29 C.F.R. part 5.

(f) All contracts must include EDA requirements and regulations that involve a requirement on the contractor or sub-contractor to report information to EDA, the Recipient or any other federal agency.

- (g) All contracts must include EDA requirements and regulations pertaining to patent rights with respect to any discovery or invention which arises or is developed in the course of or under such contract.
- (h) All contracts must include EDA requirements and regulations pertaining to copyrights and rights in data.
- (i) All contracts and subgrants in excess of \$150,000 must contain a provision that requires compliance with all applicable standards, orders, or requirements issued under the Clean Air Act (42 U.S.C. § 7401 *et seq.*) and the Federal Water Pollution Control Act (Clean Water Act) (33 U.S.C. § 1251 *et seq.*), and Executive Order 11738, *Providing for Administration of the Clean Air Act and the Federal Water Pollution Control Act With Respect to Federal Contracts, Grants, or Loans*.
- (j) Contracts must contain mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6201).
- (k) Contracts must contain a provision ensuring that contracts are not to be made to parties on the government wide Excluded Parties List System in the System for Award Management (SAM), in accordance with the OMB guidelines at 2 C.F.R. part 180.
- (l) Contracts must contain a provision ensure compliance with the Byrd Anti-Lobbying Amendment (31 U.S.C. § 1352) under which contractors that apply or bid for an award of \$100,000 or more must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. § 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.
- (m) If the Recipient is a state agency or agency of a political subdivision of a state, any contract awarded must contain a provision ensuring compliance with section 6002 of the Solid Waste Disposal Act (42 U.S.C. § 6962), as amended by the Resource Conservation and Recovery Act related to the procurement of recovered materials.

4. **REQUIRED PROVISIONS DEEMED INSERTED**

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

5. **INSPECTION BY EDA REPRESENTATIVES**

The authorized representatives and agents of EDA shall be permitted to inspect all work, materials, payrolls, personnel records, invoices of materials, and other relevant data and records.

6. **EXAMINATION AND RETENTION OF CONTRACTOR'S RECORDS**

(a) The Owner, EDA, or the Comptroller General of the United States, or any of their duly authorized representatives shall, generally until three years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

(b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders that do not exceed \$10,000.

(c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the Owner, EDA, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

7. **CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES**

Immediately after execution and delivery of the contract, and before the first partial payment is made, the Contractor shall deliver to the Owner an estimated construction progress schedule in a form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents and the anticipated amount of each monthly payment that will become due to the Contractor in accordance with the progress schedule. The Contractor also shall furnish the Owner (a) a detailed estimate giving a complete breakdown of the contract price and (b) periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only to determine the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

8. **CONTRACTOR'S TITLE TO MATERIAL**

No materials, supplies, or equipment for the work shall be purchased by the Contractor or by any subcontractor that is subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants and guarantees that he/she has good title to all work, materials, and equipment used by him/her in the Work, free and clear of all liens, claims, or encumbrances.

9. **INSPECTION AND TESTING OF MATERIALS**

All materials and equipment used in the completion of the Work shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Owner. Materials of construction, particularly those upon which the strength and durability of any structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for intended uses.

10. **"OR EQUAL" CLAUSE**

Whenever a material, article, or piece of equipment is identified in the Contract Documents by reference to manufacturers' or vendors' names, trade names, catalogue numbers, etc., it is intended merely to establish a standard. Any material, article, or equipment of other manufacturers and vendors that will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Architect/Engineer, of equal substance and function. However, such substitution material, article, or equipment shall not be purchased or installed by the Contractor without the Architect/Engineer's written approval.

11. **PATENT FEES AND ROYALTIES**

(a) Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device that is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Architect/Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the Owner in the Contract Documents.

(b) To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the Owner and the Architect/Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

12. **CLAIMS FOR EXTRA COSTS**

No claims for extra work or cost shall be allowed unless the same was done in pursuance of a written order from the Architect/Engineer approved by the Owner.

13. **CONTRACTORS AND SUBCONTRACTORS INSURANCE**

(a) The Contractor shall not commence work under this Contract until the Contractor has obtained all insurance reasonably required by the Owner, nor shall the Contractor allow any subcontractor to commence work on his/her subcontract until the insurance required of the subcontractor has been so obtained and approved.

(b) Types of insurance normally required are:

- (1) Workers' Compensation
- (2) Contractor's Public Liability and Property Damage
- (3) Contractor's Vehicle Liability
- (4) Subcontractors' Public Liability, Property Damage and Vehicle Liability
- (5) Builder's Risk (Fire and Extended Coverage)

(c) **Scope of Insurance and Special Hazards:** The insurance obtained, which is described above, shall provide adequate protection for the Contractor and his/her subcontractors, respectively, against damage claims that may arise from operations under this contract, whether such operations be by the insured or by anyone directly or indirectly employed by him/her and also against any of the special hazards that may be encountered in the performance of this Contract.

(d) **Proof of Carriage of Insurance:** The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates, and dates of expiration of applicable insurance policies.

14. **CONTRACT SECURITY BONDS**

(a) If the amount of this Contract exceeds \$150,000, the Contractor shall furnish a performance bond in an amount at least equal to one hundred percent (100%) of the Contract price as security for the faithful performance of this Contract and also a payment bond in an amount equal to one hundred percent (100%) of the Contract price or in a penal sum not less than that prescribed by State, Territorial, or local law, as security for the payment of all persons performing labor on the Work under this Contract and furnishing materials in connection with this Contract. The performance bond and the payment bond may be in one or in separate instruments in accordance with local law. Before final acceptance, each bond must be approved by EDA. If the amount of this Contract does not exceed \$150,000, the Owner shall specify the amount of the payment and performance bonds.

(b) All bonds shall be in the form prescribed by the Contract Documents except as otherwise provided in applicable laws or regulations, and shall be executed by such sureties as are named in the current list of *Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies* as published in Treasury Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's

authority to act. Surety companies executing the bonds must also be authorized to transact business in the state where the Work is located.

15. **LABOR STANDARDS - DAVIS-BACON AND RELATED ACTS**
(as required by section 602 of PWEDA)

(a) **Minimum Wages**

(1) All laborers and mechanics employed or working upon the site of the Work in the construction or development of the Project will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act at 29 C.F.R. part 3, the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at the time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor, which is attached hereto and made a part hereof, regardless of any contractual relationship that may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 C.F.R. § 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 C.F.R. § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates determined under 29 C.F.R. § 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(2) (i) Any class of laborers or mechanics to be employed under the Contract, but not listed in the wage determination, shall be classified in conformance with the wage determination. EDA shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(A) The work to be performed by the classification requested is not performed by a classification in the wage determination;

(B) The classification is utilized in the area by the construction industry; and

(C) The proposed wage rate, including any bona fide fringe benefits, bears a

reasonable relationship to the wage rates contained in the wage determination.

(ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and EDA or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by EDA or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210.

(iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and EDA or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), EDA or its designee shall refer the questions, including the views of all interested parties and the recommendation of EDA or its designee, to the Administrator for determination.

(iv) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(2)(ii) or (iii) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(b) **Withholding**

EDA or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other federal contract with the same prime Contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee or helper employed or working on the site of the Work in the construction or development of the Project, all or part of the wages required by the Contract, EDA or its designee may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations

have ceased. EDA or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

(c) **Payrolls and basic records**

(1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the Work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the Work in the construction or development of the Project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 C.F.R. § 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, the plan or program is financially responsible, and the plan or program has been communicated in writing to the laborers or mechanics affected, and provide records that show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(2) (i) For each week in which Contract work is performed, the Contractor shall submit a copy of all payrolls to the Owner for transmission to EDA or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 C.F.R. part 5.5(a)(3)(i). This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose. It may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402; or downloaded from the U.S. Department of Labor's website at <https://www.dol.gov/whd/forms/wh347.pdf>. The prime Contractor is responsible for the submission of copies of payrolls by all subcontractors

(ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(A) That the payroll for the payroll period contains the information required to be maintained under 29 C.F.R. § 5.5(a)(3)(i) and that such information is correct and complete;

(B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 C.F.R. part 3; and

(C) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

(iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 15(c)(2)(ii) of this section.

(iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under section 1001 of Title 18 and section 3729 of Title 31 of the U.S. Code.

(3) The Contractor or subcontractor shall make the records required under paragraph 15(c)(1) of this section available for inspection, copying, or transcription by authorized representatives of EDA or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, EDA or its designee may, after written notice to the Contractor or Owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 C.F.R. § 5.12.

(d) **Apprentices and Trainees.**

(1) **Apprentices.** Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training (Bureau), or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any

apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a Project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) **Trainees.** Except as provided in 29 C.F.R. § 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program that has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(3) **Equal employment opportunity.** The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity

requirements of Executive Order 11246, *Equal Employment Opportunity*, as amended, and 29 C.F.R. part 30.

(e) **Compliance with Copeland Anti-Kickback Act Requirements.** The Contractor shall comply with the Copeland Anti-Kickback Act (18 U.S.C. § 874 and 40 U.S.C. § 3145) as supplemented by Department of Labor regulations (29 C.F.R. part 3, “Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States”). The Act provides that the Contractor and any subcontractors shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which they are otherwise entitled. The Owner shall report all suspected or reported violations to EDA.

(f) **Subcontracts.** The Contractor and any subcontractors will insert in any subcontracts the clauses contained in 29 C.F.R. §§ 5.5(a)(1) through (10) and such other clauses as EDA or its designee may require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 C.F.R. § 5.5.

(g) **Contract termination; debarment.** The breach of the contract clauses in 29 C.F.R. § 5.5 may be grounds for termination of the contract, and for debarment as a Contractor and a subcontractor as provided in 29 C.F.R. § 5.12.

(h) **Compliance with Davis-Bacon and Related Act Requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 C.F.R. parts 1, 3, and 5 are herein incorporated by reference in this contract.

(i) **Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 C.F.R. parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and EDA or its designee, the U.S. Department of Labor, or the employees or their representatives.

(j) **Certification of Eligibility.**

(1) By entering into this Contract, the Contractor certifies that neither it nor any person or firm that has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

(2) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 C.F.R. § 5.12(a)(1).

(3) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. § 1001.

16. **LABOR STANDARDS - CONTRACT WORK HOURS AND SAFETY STANDARDS ACT**

As used in this paragraph, the terms “laborers” and “mechanics” include watchmen and guards.

(a) **Overtime requirements.** No Contractor or subcontractor contracting for any part of the Contract work, which may require or involve the employment of laborers or mechanics, shall require or permit any such laborer or mechanic in any workweek in which that person is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(b) **Violation; liability for unpaid wages, liquidated damages.** In the event of any violation of the clause set forth in paragraph (a) of this section, the Contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a) of this section.

(c) **Withholding for unpaid wages and liquidated damages.** EDA or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor under any such Contract or any other federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b) of this section.

(d) **Subcontracts.** The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (a) through (c) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a) through (c) of this section.

17. **EQUAL EMPLOYMENT OPPORTUNITY**

(a) The Recipient hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 C.F.R. chapter 60, which is paid for in whole or in part with funds obtained from EDA, the following equal opportunity clause:

During the performance of this contract, the Contractor agrees as follows:

Economic Development Administration
Contracting Provisions for Construction Projects

(1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. The Contractor agrees to post in conspicuous places available to employees and applicants for employment notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers representatives of the Contractor's commitments hereunder, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965 and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by EDA and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the Contractor's noncompliance with the nondiscrimination clauses of

this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally-assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation or order of the Secretary of Labor, or as otherwise provided by law.

(8) The Contractor will include the portion of the sentence immediately preceding paragraph 17(a)(1) and the provisions of paragraphs 17(a)(1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as EDA or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however, that in the event the Contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by EDA or the Secretary of Labor, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

(9) The Recipient further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally-assisted construction work. Provided, however, that if the Recipient so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality, or subdivision of such government that does not participate in work on or under the Contract.

(10) The Recipient agrees that it will assist and cooperate actively with EDA and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish EDA and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist EDA in the discharge of the EDA's primary responsibility for securing compliance.

(11) The Recipient further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a Contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by EDA or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the Recipient agrees that if it fails or refuses to comply with these undertakings, EDA may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this EDA financial assistance; refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case

to the Department of Justice for appropriate legal proceedings.

(b) Exemptions to Above Equal Opportunity Clause (41 C.F.R. chapter 60):

(1) Contracts and subcontracts not exceeding \$10,000 (other than Government bills of lading, and other than contracts and subcontracts with depositories of Federal funds in any amount and with financial institutions which are issuing and paying agents for U.S. savings bonds and savings notes) are exempt. The amount of the Contract, rather than the amount of the federal financial assistance, shall govern in determining the applicability of this exemption.

(2) Except in the case of subcontractors for the performance of construction work at the site of construction, the clause shall not be required to be inserted in subcontracts below the second tier.

(3) Contracts and subcontracts not exceeding \$10,000 for standard commercial supplies or raw materials are exempt.

18. **CONTRACTING WITH SMALL, MINORITY AND WOMEN'S BUSINESSES**

(a) If the Contractor intends to let any subcontracts for a portion of the work, the Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services.

(b) Affirmative steps shall consist of:

(1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(2) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;

(3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;

(4) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises;

(5) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies;

(6) Requiring each party to a subcontract to take the affirmative steps of this section; and

(7) The Contractor is encouraged to procure goods and services from labor surplus area firms.

19. **HEALTH, SAFETY, AND ACCIDENT PREVENTION**

(a) In performing this contract, the Contractor shall:

- (1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to their health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;
- (2) Protect the lives, health, and safety of other persons;
- (3) Prevent damage to property, materials, supplies, and equipment; and
- (4) Avoid work interruptions.

(b) For these purposes, the Contractor shall:

- (1) Comply with regulations and standards issued by the Secretary of Labor at 29 C.F.R. part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701 – 3708); and
- (2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.

(c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this Contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 C.F.R. part 1904.

(d) The Owner shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the Work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Owner may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.

(e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as EDA, or the Secretary of Labor shall direct as a means of enforcing such provisions.

20. **CONFLICT OF INTEREST AND OTHER PROHIBITED INTERESTS**

- (a) No official of the Owner who is authorized in such capacity and on behalf of the Owner to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part hereof.
- (b) No officer, employee, architect, attorney, engineer, or inspector of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the Project.
- (c) The Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the Contract Documents has a corporate or financial affiliation with the supplier or manufacturer.
- (d) The Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, may be involved. Such a conflict may arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in the Contractor. The Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors, or anything of monetary value from the Contractor or subcontractors.
- (e) If the Owner finds after a notice and hearing that the Contractor, or any of the Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of the Owner or EDA in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, the Owner may, by written notice to the Contractor, terminate this Contract. The Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which the Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.
- (f) In the event this Contract is terminated as provided in paragraph (e) of this section, the Owner may pursue the same remedies against the Contractor as it could pursue in the event of a breach of this Contract by the Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, the Owner may pursue exemplary damages in an amount (as determined by the Owner) which shall not be less than three nor more than ten times the costs the Contractor incurs in providing any such gratuities to any such officer or employee.

21. **RESTRICTIONS ON LOBBYING**

(a) This Contract, or subcontract is subject to 31 U.S.C. § 1352, regarding lobbying restrictions. The section is explained in the common rule, 15 C.F.R. part 28 (55 FR 6736-6748, February 26, 1990). Each bidder under this Contract or subcontract is generally prohibited from using federal funds for lobbying the Executive or Legislative Branches of the Federal Government in connection with this EDA Award.

(b) **Contract Clause Threshold:** This Contract Clause regarding lobbying must be included in each bid for a contract or subcontract exceeding \$100,000 of federal funds at any tier under the EDA Award.

(c) **Certification and Disclosure:** Each bidder of a contract or subcontract exceeding \$100,000 of federal funds at any tier under the federal Award must file Form CD-512, *Certification Regarding Lobbying – Lower Tier Covered Transactions*, and, if applicable, Standard Form-LLL, *Disclosure of Lobbying Activities*, regarding the use of any nonfederal funds for lobbying. Certifications shall be retained by the Contractor or subcontractor at the next higher tier. All disclosure forms, however, shall be forwarded from tier to tier until received by the Recipient of the EDA Award, who shall forward all disclosure forms to EDA.

(d) **Continuing Disclosure Requirement:** Each Contractor or subcontractor that is subject to the Certification and Disclosure provision of this Contract Clause is required to file a disclosure form at the end of each calendar quarter in which there occurs any event that requires disclosure or that materially affects the accuracy of the information contained in any disclosure form previously filed by such person. Disclosure forms shall be forwarded from tier to tier until received by the Recipient of the EDA Award, who shall forward all disclosure forms to EDA.

(e) **Indian Tribes, Tribal Organizations, or Other Indian Organizations:** Indian tribes, tribal organizations, or any other Indian organizations, including Alaskan Native organizations, are excluded from the above lobbying restrictions and reporting requirements, but only with respect to expenditures that are by such tribes or organizations for lobbying activities permitted by other federal law. An Indian tribe or organization that is seeking an exclusion from Certification and Disclosure requirements must provide EDA with the citation of the provision or provisions of federal law upon which it relies to conduct lobbying activities that would otherwise be subject to the prohibitions in and to the Certification and Disclosure requirements of 31 U.S.C. § 1352, preferably through an attorney's opinion. Note, also, that a non-Indian subrecipient, contractor, or subcontractor under an award to an Indian tribe, for example, is subject to the restrictions and reporting requirements.

22. **HISTORICAL AND ARCHAEOLOGICAL DATA PRESERVATION**

The Contractor agrees to facilitate the preservation and enhancement of structures and objects of historical, architectural or archaeological significance and when such items are found and/or unearthed during the course of project construction. Any excavation by the Contractor that uncovers an historical or archaeological artifact shall be immediately reported to the Owner and a representative of EDA. Construction shall be temporarily halted pending the notification process and further directions issued by EDA after consultation with the State Historic

Preservation Officer (SHPO) for recovery of the items. *See* the National Historic Preservation Act of 1966 (54 U.S.C. § 300101 *et seq.*, formerly at 16 U.S.C. § 470 *et seq.*) and Executive Order No. 11593 of May 31, 1971.

23. **CLEAN AIR AND WATER**

Applicable to Contracts in Excess of \$150,000

(a) **Definition.** “Facility” means any building, plant, installation, structure, mine, vessel, or other floating craft, location, or site of operations, owned, leased, or supervised by the Contractor or any subcontractor, used in the performance of the Contract or any subcontract. When a location or site of operations includes more than one building, plant, installation, or structure, the entire location or site shall be deemed a facility except when the Administrator, or a designee, of the United States Environmental Protection Agency (EPA) determines that independent facilities are collocated in one geographical area.

(b) In compliance with regulations issued by the EPA, 2 C.F.R. part 1532, pursuant to the Clean Air Act, as amended (42 U.S.C. § 7401 *et seq.*); the Federal Water Pollution Control Act, as amended (33 U.S.C. § 1251 *et seq.*); and Executive Order 11738, the Contractor agrees to:

(1) Not utilize any facility in the performance of this contract or any subcontract which is listed on the Excluded Parties List System, part of the System for Award Management (SAM), pursuant to 2 C.F.R. part 1532 for the duration of time that the facility remains on the list;

(2) Promptly notify the Owner if a facility the Contractor intends to use in the performance of this contract is on the Excluded Parties List System or the Contractor knows that it has been recommended to be placed on the List;

(3) Comply with all requirements of the Clean Air Act and the Federal Water Pollution Control Act, including the requirements of section 114 of the Clean Air Act and section 308 of the Federal Water Pollution Control Act, and all applicable clean air and clean water standards; and

(4) Include or cause to be included the provisions of this clause in every subcontract and take such action as EDA may direct as a means of enforcing such provisions.

24. **USE OF LEAD-BASED PAINTS ON RESIDENTIAL STRUCTURES**

(a) If the work under this Contract involves construction or rehabilitation of residential structures over \$5,000, the Contractor shall comply with the Lead-based Paint Poisoning Prevention Act (42 U.S.C. § 4831). The Contractor shall assure that paint or other surface coatings used in a residential property does not contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight or 5,000 parts per million (ppm) by weight. For purposes of this section, “residential property” means a dwelling unit, common areas, building exterior surfaces, and any surrounding land, including outbuildings, fences and play equipment affixed to the land, belonging to an owner and available for use by residents, but not

including land used for agricultural, commercial, industrial or other non-residential purposes, and not including paint on the pavement of parking lots, garages, or roadways.

- (b) As a condition to receiving assistance under PWEDA, recipients shall assure that the restriction against the use of lead-based paint is included in all contracts and subcontracts involving the use of federal funds.

25. **ENERGY EFFICIENCY**

The Contractor shall comply with all standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. § 6201) for the State in which the Work under the Contract is performed.

26. **ENVIRONMENTAL REQUIREMENTS**

When constructing a Project involving trenching and/or other related earth excavations, the Contractor shall comply with the following environmental constraints:

- (1) **Wetlands.** When disposing of excess, spoil, or other construction materials on public or private property, the Contractor shall not fill in or otherwise convert wetlands.
- (2) **Floodplains.** When disposing of excess, spoil, or other construction materials on public or private property, the Contractor shall not fill in or otherwise convert 100 year floodplain areas delineated on the latest Federal Emergency Management Agency (FEMA) Floodplain Maps, or other appropriate maps, i.e., alluvial soils on Natural Resource Conservation Service (NRCS) Soil Survey Maps.
- (3) **Endangered Species.** The Contractor shall comply with the Endangered Species Act, which provides for the protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of the Contractor, the Contractor will immediately report this evidence to the Owner and a representative of EDA. Construction shall be temporarily halted pending the notification process and further directions issued by EDA after consultation with the U.S. Fish and Wildlife Service.

27. **DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSIONS**

As required by Executive Orders 12549 and 12689, *Debarment and Suspension*, 2 C.F.R. Part 180 and implemented by the Department of Commerce at 2 C.F.R. part 1326, for prospective participants in lower tier covered transactions (except subcontracts for goods or services under the \$25,000 small purchase threshold unless the subrecipient will have a critical influence on or substantive control over the award), the Contractor agrees that:

- (1) By entering into this Contract, the Contractor and subcontractors certify, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared Economic Development Administration Contracting Provisions for Construction Projects

ineligible, or voluntarily excluded from participation in this Contract by any federal department or agency.

(2) Where the Contractor or subcontractors are unable to certify to any of the statements in this certification, the Contractor or subcontractors shall attach an explanation to this bid.

See also 2 C.F.R. part 180 and 2 C.F.R. § 200.342.

28. **EDA PROJECT SIGN**

The Contractor shall supply, erect, and maintain in good condition a Project sign according to the specifications provided by EDA. To the extent practical, the sign should be a free standing sign. Project signs shall not be located on public highway rights-of-way. Location and height of signs will be coordinated with the local agency responsible for highway or street safety in the Project area, if any possibility exists for obstructing vehicular traffic line of sight. Whenever the EDA site sign specifications conflict with State law or local ordinances, the EDA Regional Director will permit such conflicting specifications to be modified so as to comply with State law or local ordinance.

29. **BUY AMERICA**

To the greatest extent practicable, contractors are encouraged to purchase American-made equipment and products with funding provided under EDA financial assistance awards.

"General Decision Number: CA20230022 11/03/2023

Superseded General Decision Number: CA20220022

State: California

Construction Types: Building, Heavy (Heavy and Dredging) and Highway

County: Los Angeles County in California.

BUILDING CONSTRUCTION PROJECTS; DREDGING PROJECTS (does not include hopper dredge work); HEAVY CONSTRUCTION PROJECTS (does not include water well drilling); HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/06/2023
1	01/13/2023
2	01/20/2023
3	02/10/2023
4	03/17/2023
5	06/23/2023
6	06/30/2023
7	07/14/2023
8	08/11/2023
9	08/18/2023
10	09/08/2023
11	09/15/2023
12	09/29/2023
13	10/06/2023
14	11/03/2023

ASBE0005-002 07/04/2022

	Rates	Fringes
Asbestos Workers/Insulator (Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems).....	\$ 49.58	25.27
Fire Stop Technician (Application of Firestopping Materials for wall openings and penetrations in walls, floors, ceilings and curtain walls).....	\$ 32.09	19.66

ASBE0005-004 07/04/2022

	Rates	Fringes
Asbestos Removal worker/hazardous material handler (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging and disposing of all insulation materials from mechanical systems, whether they contain asbestos or not)....	\$ 23.52	13.37

* BOIL0092-003 01/01/2023

	Rates	Fringes
BOILERMAKER.....	\$ 49.05	41.79

* BRCA0004-007 05/01/2020

	Rates	Fringes
BRICKLAYER; MARBLE SETTER.....	\$ 41.53	19.48

*The wage scale for prevailing wage projects performed in Blythe, China lake, Death Valley, Fort Irwin, Twenty-Nine Palms, Needles and 1-15 corridor (Barstow to the Nevada State Line) will be Three Dollars (\$3.00) above the

standard San Bernardino/Riverside County hourly wage rate

 BRCA0018-004 06/01/2022

	Rates	Fringes
MARBLE FINISHER.....	\$ 37.87	14.13
TILE FINISHER.....	\$ 32.44	12.54
TILE LAYER.....	\$ 45.05	18.33

 BRCA0018-010 09/01/2022

	Rates	Fringes
TERRAZZO FINISHER.....	\$ 38.37	14.13
TERRAZZO WORKER/SETTER.....	\$ 46.49	14.66

 CARP0213-001 07/01/2021

	Rates	Fringes
CARPENTER		
(1) Carpenter, Cabinet Installer, Insulation Installer, Hardwood Floor Worker and acoustical installer.....	\$ 51.60	16.28
(2) Millwright.....	\$ 52.10	16.48
(3) Piledrivermen/Derrick Bargeman, Bridge or Dock Carpenter, Heavy Frammer, Rock Bargeman or Scowman, Rockslinger, Shingler (Commercial).....	\$ 51.73	16.28
(4) Pneumatic Nailer, Power Stapler.....	\$ 51.85	16.28
(5) Sawfiler.....	\$ 51.69	16.28
(6) Scaffold Builder.....	\$ 42.80	16.28
(7) Table Power Saw Operator.....	\$ 51.70	16.28

FOOTNOTE: Work of forming in the construction of open cut sewers or storm drains, on operations in which horizontal lagging is used in conjunction with steel H-Beams driven or placed in pre- drilled holes, for that portion of a lagged trench against which concrete is poured, namely, as a substitute for back forms (which work is performed by piledrivers): \$0.13 per hour additional.

 CARP0213-002 07/01/2021

	Rates	Fringes
Diver		
(1) Wet.....	\$ 834.40	16.28
(2) Standby.....	\$ 445.84	16.28
(3) Tender.....	\$ 437.84	16.28
(4) Assistant Tender.....	\$ 413.84	16.28

Amounts in ""Rates' column are per day

 CARP0213-004 07/01/2021

	Rates	Fringes
Drywall		
DRYWALL INSTALLER/LATHER.....	\$ 51.60	16.28
STOCKER/SCRAPPER.....	\$ 22.16	8.62

 CARP0721-001 07/01/2021

	Rates	Fringes
Modular Furniture Installer.....	\$ 21.85	7.15

 ELEC0011-004 06/30/2023

	Rates	Fringes
ELECTRICIAN (INSIDE ELECTRICAL WORK)		
Journeyman Electrician.....	\$ 60.80	3%+29.77
ELECTRICIAN (INTELLIGENT TRANSPORTATION SYSTEMS Street Lighting, Traffic Signals, CCTV, and Underground Systems)		
Journeyman Transportation Electrician.....	\$ 60.80	3%+29.77
Technician.....	\$ 45.60	3%+29.77

FOOT NOTE:
 CABLE SPLICER & INSTRUMENT PERSON: Recieve 5% additional per hour above Journeyman Electrician basic hourly rate.
 TUNNEL WORK: 10% additional per hour.

SCOPE OF WORK - TRANSPORTATION SYSTEMS

ELECTRICIAN:
 Installation of street lights and traffic signals,including electrical circuitry, programmable controllers, pedestal-mounted electrical meter enclosures and laying of pre-assembled multi-conductor cable in ducts, layout of electrical systems and communication installation, including proper position of trench depths and radius at duct banks, location for man holes, pull boxes, street lights and traffic signals. Installation of underground ducts for electrical,telephone, cable television and communication systems. Pulling,termination and splicing of traffic signal and street lighting conductors and electrical systems including interconnect,detector loop, fiber optic cable and video/cable.

TECHNICIAN:
 Distribution of material at job site, manual excavation and backfill, installation of system conduits and raceways for electrical, telephone, cable television and communication systems. Pulling, terminating and splicing of traffic signal and street lighting conductors and electrical systems including interconnect, detector loop, fiber optic cable and video/data.

 * ELEC0011-005 06/26/2023

COMMUNICATIONS & SYSTEMS WORK (excludes any work on Intelligent Transportation Systems or CCTV highway systems)

	Rates	Fringes
Communications System		
Installer.....	\$ 46.47	3%+15.53
Technician.....	\$ 33.30	3%+27.82

SCOPE OF WORK The work covered shall include the installation, testing, service and maintenance, of the following systems that utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for TV monitoring and surveillance, background foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms and low voltage master clock systems.

A. Communication systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems SCADA (Supervisory control/data acquisition PCM (Pulse code modulation) Inventory control systems Digital data systems Broadband & baseband and carriers Point of sale systems VSAT data systems Data communication systems RF and remote control systems Fiber optic data systems

B. Sound and Voice Transmission/Transference Systems Background-Foreground Music Intercom and Telephone Interconnect Systems Sound and Musical Entertainment Systems Nurse Call Systems Radio Page Systems School Intercom and Sound Systems Burglar Alarm Systems Low-Voltage Master Clock Systems Multi-Media/Multiplex Systems Telephone Systems RF Systems and Antennas and Wave Guide

C. *Fire Alarm Systems-installation, wire pulling and testing.

D. Television and Video Systems Television Monitoring and Surveillance Systems Video Security Systems Video Entertainment Systems Video Educational Systems CATV and CCTV

E. Security Systems, Perimeter Security Systems, Vibration Sensor Systems Sonar/Infrared Monitoring Equipment, Access Control Systems, Card Access Systems

*Fire Alarm Systems

1. Fire Alarms-In Raceways: Wire and cable pulling in raceways performed at the current electrician wage rate and fringe benefits.
2. Fire Alarms-Open Wire Systems: installed by the Technician.

ELEC1245-001 06/01/2022

	Rates	Fringes
LINE CONSTRUCTION		
(1) Lineman; Cable splicer..	\$ 64.40	22.58
(2) Equipment specialist (operates crawler		

tractors, commercial motor vehicles, backhoes, trenchers, cranes (50 tons and below), overhead & underground distribution line equipment).....	\$ 50.00	21.30
(3) Groundman.....	\$ 38.23	20.89
(4) Powderman.....	\$ 51.87	18.79

HOLIDAYS: New Year's Day, M.L. King Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day and day after Thanksgiving, Christmas Day

ELEV0018-001 01/01/2023

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 63.95	37.335+a+b

FOOTNOTE:

a. PAID VACATION: Employer contributes 8% of regular hourly rate as vacation pay credit for employees with more than 5 years of service, and 6% for 6 months to 5 years of service.

b. PAID HOLIDAYS: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, Friday after Thanksgiving, and Christmas Day.

ENGI0012-003 07/01/2022

	Rates	Fringes
OPERATOR: Power Equipment (All Other Work)		
GROUP 1.....	\$ 51.90	30.70
GROUP 2.....	\$ 52.68	30.70
GROUP 3.....	\$ 52.97	30.70
GROUP 4.....	\$ 54.46	30.70
GROUP 5.....	\$ 48.96	25.25
GROUP 6.....	\$ 54.68	30.70
GROUP 8.....	\$ 54.79	30.70
GROUP 9.....	\$ 49.29	25.25
GROUP 10.....	\$ 54.91	30.70
GROUP 11.....	\$ 49.41	25.25
GROUP 12.....	\$ 55.08	30.70
GROUP 13.....	\$ 55.18	30.70
GROUP 14.....	\$ 55.21	30.70
GROUP 15.....	\$ 55.29	30.70
GROUP 16.....	\$ 55.41	30.70
GROUP 17.....	\$ 55.58	30.70
GROUP 18.....	\$ 55.68	30.70
GROUP 19.....	\$ 55.79	30.70
GROUP 20.....	\$ 55.91	30.70
GROUP 21.....	\$ 56.08	30.70
GROUP 22.....	\$ 56.18	30.70
GROUP 23.....	\$ 56.29	30.70
GROUP 24.....	\$ 56.41	30.70
GROUP 25.....	\$ 56.58	30.70

OPERATOR: Power Equipment (Cranes, Piledriving & Hoisting)		
GROUP 1.....	\$ 53.25	30.70
GROUP 2.....	\$ 54.03	30.70

GROUP 3.....	\$ 54.32	30.70
GROUP 4.....	\$ 54.46	30.70
GROUP 5.....	\$ 54.68	30.70
GROUP 6.....	\$ 54.79	30.70
GROUP 7.....	\$ 54.91	30.70
GROUP 8.....	\$ 55.08	30.70
GROUP 9.....	\$ 55.25	30.70
GROUP 10.....	\$ 56.25	30.70
GROUP 11.....	\$ 57.25	30.70
GROUP 12.....	\$ 58.25	30.70
GROUP 13.....	\$ 59.25	30.70

OPERATOR: Power Equipment
(Tunnel Work)

GROUP 1.....	\$ 54.53	30.70
GROUP 2.....	\$ 54.82	30.70
GROUP 3.....	\$ 54.96	30.70
GROUP 4.....	\$ 55.18	30.70
GROUP 5.....	\$ 55.29	30.70
GROUP 6.....	\$ 55.41	30.70
GROUP 7.....	\$ 55.71	30.70

PREMIUM PAY:

\$3.75 per hour shall be paid on all Power Equipment Operator work on the following Military Bases: China Lake Naval Reserve, Vandenberg AFB, Point Arguello, Seely Naval Base, Fort Irwin, Nebo Annex Marine Base, Marine Corp Logistics Base Yermo, Edwards AFB, 29 Palms Marine Base and Camp Pendleton

Workers required to suit up and work in a hazardous material environment: \$2.00 per hour additional. Combination mixer and compressor operator on gunite work shall be classified as a concrete mobile mixer operator.

SEE ZONE DEFINITIONS AFTER CLASSIFICATIONS

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Bargeman; Brakeman; Compressor operator; Ditch Witch, with seat or similar type equipment; Elevator operator-inside; Engineer Oiler; Forklift operator (includes loed, lull or similar types under 5 tons; Generator operator; Generator, pump or compressor plant operator; Pump operator; Signalman; Switchman

GROUP 2: Asphalt-rubber plant operator (nurse tank operator); Concrete mixer operator-skip type; Conveyor operator; Fireman; Forklift operator (includes loed, lull or similar types over 5 tons; Hydrostatic pump operator; oiler crusher (asphalt or concrete plant); Petromat laydown machine; PJU side dum jack; Screening and conveyor machine operator (or similar types); Skiploader (wheel type up to 3/4 yd. without attachment); Tar pot fireman; Temporary heating plant operator; Trenching machine oiler

GROUP 3: Asphalt-rubber blend operator; Bobcat or similar type (Skid steer); Equipment greaser (rack); Ford Ferguson (with dragtype attachments); Helicopter radioman (ground); Stationary pipe wrapping and cleaning machine operator

GROUP 4: Asphalt plant fireman; Backhoe operator (mini-max or similar type); Boring machine operator; Boxman or mixerman (asphalt or concrete); Chip spreading machine operator; Concrete cleaning decontamination machine operator; Concrete Pump Operator (small portable); Drilling machine

operator, small auger types (Texoma super economatic or similar types - Hughes 100 or 200 or similar types - drilling depth of 30' maximum); Equipment greaser (grease truck); Guard rail post driver operator; Highline cableway signalman; Hydra-hammer-aero stomper; Micro Tunneling (above ground tunnel); Power concrete curing machine operator; Power concrete saw operator; Power-driven jumbo form setter operator; Power sweeper operator; Rock Wheel Saw/Trencher; Roller operator (compacting); Screed operator (asphalt or concrete); Trenching machine operator (up to 6 ft.); Vacuum or much truck

GROUP 5: Equipment Greaser (Grease Truck/Multi Shift).

GROUP 6: Articulating material hauler; Asphalt plant engineer; Batch plant operator; Bit sharpener; Concrete joint machine operator (canal and similar type); Concrete planer operator; Dandy digger; Deck engine operator; Derrickman (oilfield type); Drilling machine operator, bucket or auger types (Calweld 100 bucket or similar types - Watson 1000 auger or similar types - Texoma 330, 500 or 600 auger or similar types - drilling depth of 45' maximum); Drilling machine operator; Hydrographic seeder machine operator (straw, pulp or seed), Jackson track maintainer, or similar type; Kalamazoo Switch tamper, or similar type; Machine tool operator; Maginnis internal full slab vibrator, Mechanical berm, curb or gutter (concrete or asphalt); Mechanical finisher operator (concrete, Clary-Johnson-Bidwell or similar); Micro tunnel system (below ground); Pavement breaker operator (truck mounted); Road oil mixing machine operator; Roller operator (asphalt or finish), rubber-tired earth moving equipment (single engine, up to and including 25 yds. struck); Self-propelled tar pipelining machine operator; Skiploader operator (crawler and wheel type, over 3/4 yd. and up to and including 1-1/2 yds.); Slip form pump operator (power driven hydraulic lifting device for concrete forms); Tractor operator-bulldozer, tamper-scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types); Tugger hoist operator (1 drum); Ultra high pressure waterjet cutting tool system operator; Vacuum blasting machine operator

GROUP 8: Asphalt or concrete spreading operator (tamping or finishing); Asphalt paving machine operator (Barber Greene or similar type); Asphalt-rubber distribution operator; Backhoe operator (up to and including 3/4 yd.), small ford, Case or similar; Cast-in-place pipe laying machine operator; Combination mixer and compressor operator (gunite work); Compactor operator (self-propelled); Concrete mixer operator (paving); Crushing plant operator; Drill Doctor; Drilling machine operator, Bucket or auger types (Calweld 150 bucket or similar types - Watson 1500, 2000 2500 auger or similar types - Texoma 700, 800 auger or similar types - drilling depth of 60' maximum); Elevating grader operator; Grade checker; Gradall operator; Grouting machine operator; Heavy-duty repairman; Heavy equipment robotics operator; Kalamazoo balliste regulator or similar type; Kolman belt loader and similar type; Le Tourneau blob compactor or similar type; Loader operator (Athey, Euclid, Sierra and similar types); Mobark Chipper or similar; Ozzie padder or similar types; P.C. slot saw; Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pumpcrete gun operator; Rock Drill or similar types; Rotary drill operator (excluding caisson type); Rubber-tired

earth-moving equipment operator (single engine, caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator (multiple engine up to and including 25 yds. struck); Rubber-tired scraper operator (self-loading paddle wheel type-John Deere, 1040 and similar single unit); Self-propelled curb and gutter machine operator; Shuttle buggy; Skiploader operator (crawler and wheel type over 1-1/2 yds. up to and including 6-1/2 yds.); Soil remediation plant operator; Surface heaters and planer operator; Tractor compressor drill combination operator; Tractor operator (any type larger than D-5 - 100 flywheel h.p. and over, or similar-bulldozer, tamper, scraper and push tractor single engine); Tractor operator (boom attachments), Traveling pipe wrapping, cleaning and bending machine operator; Trenching machine operator (over 6 ft. depth capacity, manufacturer's rating); trenching Machine with Road Miner attachment (over 6 ft depth capacity): Ultra high pressure waterjet cutting tool system mechanic; Water pull (compaction) operator

GROUP 9: Heavy Duty Repairman

GROUP 10: Drilling machine operator, Bucket or auger types (Calweld 200 B bucket or similar types-Watson 3000 or 5000 auger or similar types-Texoma 900 auger or similar types-drilling depth of 105' maximum); Dual drum mixer, dynamic compactor LDC350 (or similar types); Monorail locomotive operator (diesel, gas or electric); Motor patrol-blade operator (single engine); Multiple engine tractor operator (Euclid and similar type-except Quad 9 cat.); Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Pneumatic pipe ramming tool and similar types; Prestressed wrapping machine operator; Rubber-tired earth-moving equipment operator (single engine, over 50 yds. struck); Rubber tired earth moving equipment operator (multiple engine, Euclid, caterpillar and similar over 25 yds. and up to 50 yds. struck), Tower crane repairman; Tractor loader operator (crawler and wheel type over 6-1/2 yds.); Woods mixer operator (and similar Pugmill equipment)

GROUP 11: Heavy Duty Repairman - Welder Combination, Welder - Certified.

GROUP 12: Auto grader operator; Automatic slip form operator; Drilling machine operator, bucket or auger types (Calweld, auger 200 CA or similar types - Watson, auger 6000 or similar types - Hughes Super Duty, auger 200 or similar types - drilling depth of 175' maximum); Hoe ram or similar with compressor; Mass excavator operator less than 750 cu. yards; Mechanical finishing machine operator; Mobile form traveler operator; Motor patrol operator (multi-engine); Pipe mobile machine operator; Rubber-tired earth-moving equipment operator (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Rubber-tired self-loading scraper operator (paddle-wheel-auger type self-loading - two (2) or more units)

GROUP 13: Rubber-tired earth-moving equipment operator operating equipment with push-pull system (single engine, up to and including 25 yds. struck)

GROUP 14: Canal liner operator; Canal trimmer operator;

Remote- control earth-moving equipment operator (operating a second piece of equipment: \$1.00 per hour additional);
Wheel excavator operator (over 750 cu. yds.)

GROUP 15: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine-up to and including 25 yds. struck)

GROUP 16: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 17: Rubber-tired earth-moving equipment operator, operating equipment with push-pull system (multiple engine, Euclid, Caterpillar and similar, over 50 cu. yds. struck); Tandem tractor operator (operating crawler type tractors in tandem - Quad 9 and similar type)

GROUP 18: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck)

GROUP 19: Rotex concrete belt operator (or similar types); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck)

GROUP 20: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 21: Rubber-tired earth-moving equipment operator, operating in tandem (scrapers, belly dumps and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

GROUP 22: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, up to and including 25 yds. struck)

GROUP 23: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, Caterpillar, Euclid, Athey Wagon and similar types with any and all attachments over 25 yds. and

up to and including 50 yds. struck); Rubber-tired earth-moving equipment operator, operating with the tandem push-pull system (multiple engine, up to and including 25 yds. struck)

GROUP 24: Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (single engine, over 50 yds. struck); Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck)

GROUP 25: Concrete pump operator-truck mounted; Rubber-tired earth-moving equipment operator, operating equipment with the tandem push-pull system (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck)

CRANES, PILEDIVING AND HOISTING EQUIPMENT CLASSIFICATIONS

GROUP 1: Engineer oiler; Fork lift operator (includes loed, lull or similar types)

GROUP 2: Truck crane oiler

GROUP 3: A-frame or winch truck operator; Ross carrier operator (jobsite)

GROUP 4: Bridge-type unloader and turntable operator; Helicopter hoist operator

GROUP 5: Hydraulic boom truck; Stinger crane (Austin-Western or similar type); Tugger hoist operator (1 drum)

GROUP 6: Bridge crane operator; Cretor crane operator; Hoist operator (Chicago boom and similar type); Lift mobile operator; Lift slab machine operator (Vagtborg and similar types); Material hoist and/or manlift operator; Polar gantry crane operator; Self Climbing scaffold (or similar type); Shovel, backhoe, dragline, clamshell operator (over 3/4 yd. and up to 5 cu. yds. mrc); Tugger hoist operator

GROUP 7: Pedestal crane operator; Shovel, backhoe, dragline, clamshell operator (over 5 cu. yds. mrc); Tower crane repair; Tugger hoist operator (3 drum)

GROUP 8: Crane operator (up to and including 25 ton capacity); Crawler transporter operator; Derrick barge operator (up to and including 25 ton capacity); Hoist operator, stiff legs, Guy derrick or similar type (up to and including 25 ton capacity); Shovel, backhoe, dragline, clamshell operator (over 7 cu. yds., M.R.C.)

GROUP 9: Crane operator (over 25 tons and up to and including 50 tons mrc); Derrick barge operator (over 25 tons up to and including 50 tons mrc); Highline cableway operator; Hoist operator, stiff legs, Guy derrick or similar type (over 25 tons up to and including 50 tons mrc); K-crane operator; Polar crane operator; Self erecting tower crane operator maximum lifting capacity ten tons

GROUP 10: Crane operator (over 50 tons and up to and including 100 tons mrc); Derrick barge operator (over 50 tons up to and including 100 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 50 tons up to

and including 100 tons mrc), Mobile tower crane operator (over 50 tons, up to and including 100 tons M.R.C.); Tower crane operator and tower gantry

GROUP 11: Crane operator (over 100 tons and up to and including 200 tons mrc); Derrick barge operator (over 100 tons up to and including 200 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 100 tons up to and including 200 tons mrc); Mobile tower crane operator (over 100 tons up to and including 200 tons mrc)

GROUP 12: Crane operator (over 200 tons up to and including 300 tons mrc); Derrick barge operator (over 200 tons up to and including 300 tons mrc); Hoist operator, stiff legs, Guy derrick or similar type (over 200 tons, up to and including 300 tons mrc); Mobile tower crane operator (over 200 tons, up to and including 300 tons mrc)

GROUP 13: Crane operator (over 300 tons); Derrick barge operator (over 300 tons); Helicopter pilot; Hoist operator, stiff legs, Guy derrick or similar type (over 300 tons); Mobile tower crane operator (over 300 tons)

TUNNEL CLASSIFICATIONS

GROUP 1: Skiploader (wheel type up to 3/4 yd. without attachment)

GROUP 2: Power-driven jumbo form setter operator

GROUP 3: Dinkey locomotive or motorperson (up to and including 10 tons)

GROUP 4: Bit sharpener; Equipment greaser (grease truck); Slip form pump operator (power-driven hydraulic lifting device for concrete forms); Tugger hoist operator (1 drum); Tunnel locomotive operator (over 10 and up to and including 30 tons)

GROUP 5: Backhoe operator (up to and including 3/4 yd.); Small Ford, Case or similar; Drill doctor; Grouting machine operator; Heading shield operator; Heavy-duty repairperson; Loader operator (Athey, Euclid, Sierra and similar types); Mucking machine operator (1/4 yd., rubber-tired, rail or track type); Pneumatic concrete placing machine operator (Hackley-Presswell or similar type); Pneumatic heading shield (tunnel); Pumpcrete gun operator; Tractor compressor drill combination operator; Tugger hoist operator (2 drum); Tunnel locomotive operator (over 30 tons)

GROUP 6: Heavy Duty Repairman

GROUP 7: Tunnel mole boring machine operator

ENGINEERS ZONES

\$1.00 additional per hour for all of IMPERIAL County and the portions of KERN, RIVERSIDE & SAN BERNARDINO Counties as defined below:

That area within the following Boundary: Begin in San Bernardino County, approximately 3 miles NE of the intersection of I-15 and the California State line at that point which is the NW corner of Section 1, T17N,m R14E, San Bernardino Meridian. Continue W in a straight line to that point which is

the SW corner of the northwest quarter of Section 6, T27S, R42E, Mt. Diablo Meridian. Continue North to the intersection with the Inyo County Boundary at that point which is the NE corner of the western half of the northern quarter of Section 6, T25S, R42E, MDM. Continue W along the Inyo and San Bernardino County boundary until the intersection with Kern County, as that point which is the SE corner of Section 34, T24S, R40E, MDM. Continue W along the Inyo and Kern County boundary until the intersection with Tulare County, at that point which is the SW corner of the SE quarter of Section 32, T24S, R37E, MDM. Continue W along the Kern and Tulare County boundary, until that point which is the NW corner of T25S, R32E, MDM. Continue S following R32E lines to the NW corner of T31S, R32E, MDM. Continue W to the NW corner of T31S, R31E, MDM. Continue S to the SW corner of T32S, R31E, MDM. Continue W to SW corner of SE quarter of Section 34, T32S, R30E, MDM. Continue S to SW corner of T11N, R17W, SBM. Continue E along south boundary of T11N, SBM to SW corner of T11N, R7W, SBM. Continue S to SW corner of T9N, R7W, SBM. Continue E along south boundary of T9N, SBM to SW corner of T9N, R1E, SBM. Continue S along west boundary of R1E, SMB to Riverside County line at the SW corner of T1S, R1E, SBM. Continue E along south boundary of T1s, SBM (Riverside County Line) to SW corner of T1S, R10E, SBM. Continue S along west boundary of R10E, SBM to Imperial County line at the SW corner of T8S, R10E, SBM. Continue W along Imperial and Riverside county line to NW corner of T9S, R9E, SBM. Continue S along the boundary between Imperial and San Diego Counties, along the west edge of R9E, SBM to the south boundary of Imperial County/California state line. Follow the California state line west to Arizona state line, then north to Nevada state line, then continuing NW back to start at the point which is the NW corner of Section 1, T17N, R14E, SBM

\$1.00 additional per hour for portions of SAN LUIS OBISPO, KERN, SANTA BARBARA & VENTURA as defined below:

That area within the following Boundary: Begin approximately 5 miles north of the community of Cholame, on the Monterey County and San Luis Obispo County boundary at the NW corner of T25S, R16E, Mt. Diablo Meridian. Continue south along the west side of R16E to the SW corner of T30S, R16E, MDM. Continue E to SW corner of T30S, R17E, MDM. Continue S to SW corner of T31S, R17E, MDM. Continue E to SW corner of T31S, R18E, MDM. Continue S along West side of R18E, MDM as it crosses into San Bernardino Meridian numbering area and becomes R30W. Follow the west side of R30W, SBM to the SW corner of T9N, R30W, SBM. Continue E along the south edge of T9N, SBM to the Santa Barbara County and Ventura County boundary at that point which is the SW corner of Section 34.T9N, R24W, SBM, continue S along the Ventura County line to that point which is the SW corner of the SE quarter of Section 32, T7N, R24W, SBM. Continue E along the south edge of T7N, SBM to the SE corner to T7N, R21W, SBM. Continue N along East side of R21W, SBM to Ventura County and Kern County boundary at the NE corner of T8N, R21W. Continue W along the Ventura County and Kern County boundary to the SE corner of T9N, R21W. Continue North along the East edge of R21W, SBM to the NE corner of T12N, R21W, SBM. Continue West along the north edge of T12N, SBM to the SE corner of T32S, R21E, MDM. [T12N SBM is a thin strip between T11N SBM and T32S MDM]. Continue North along the East side of R21E, MDM to the Kings County and Kern County border at the NE corner of T25S, R21E, MDM, continue West along the Kings County and Kern County Boundary until the intersection of San Luis Obispo County. Continue west along the Kings County and San Luis

Obispo County boundary until the intersection with Monterey County. Continue West along the Monterey County and San Luis Obispo County boundary to the beginning point at the NW corner of T25S, R16E, MDM.

\$2.00 additional per hour for INYO and MONO Counties and the Northern portion of SAN BERNARDINO County as defined below:

That area within the following Boundary: Begin at the intersection of the northern boundary of Mono County and the California state line at the point which is the center of Section 17, T10N, R22E, Mt. Diablo Meridian. Continue S then SE along the entire western boundary of Mono County, until it reaches Inyo County at the point which is the NE corner of the Western half of the NW quarter of Section 2, T8S, R29E, MDM. Continue SSE along the entire western boundary of Inyo County, until the intersection with Kern County at the point which is the SW corner of the SE 1/4 of Section 32, T24S, R37E, MDM. Continue E along the Inyo and Kern County boundary until the intersection with San Bernardino County at that point which is the SE corner of section 34, T24S, R40E, MDM. Continue E along the Inyo and San Bernardino County boundary until the point which is the NE corner of the Western half of the NW quarter of Section 6, T25S, R42E, MDM. Continue S to that point which is the SW corner of the NW quarter of Section 6, T27S, R42E, MDM. Continue E in a straight line to the California and Nevada state border at the point which is the NW corner of Section 1, T17N, R14E, San Bernardino Meridian. Then continue NW along the state line to the starting point, which is the center of Section 18, T10N, R22E, MDM.

REMAINING AREA NOT DEFINED ABOVE RECIEVES BASE RATE

 ENGI0012-004 08/01/2023

	Rates	Fringes
OPERATOR: Power Equipment (DREDGING)		
(1) Leverman.....	\$ 64.10	34.60
(2) Dredge dozer.....	\$ 58.13	34.60
(3) Deckmate.....	\$ 58.02	34.60
(4) Winch operator (stern winch on dredge).....	\$ 57.47	34.60
(5) Fireman-Oiler, Deckhand, Bargeman, Leveehand.....	\$ 56.93	34.60
(6) Barge Mate.....	\$ 57.54	34.60

 IRON0433-006 01/01/2023

	Rates	Fringes
IRONWORKER		
Fence Erector.....	\$ 41.28	25.66
Ornamental, Reinforcing and Structural.....	\$ 46.20	34.30

PREMIUM PAY:

\$9.00 additional per hour at the following locations:

China Lake Naval Test Station, Chocolate Mountains Naval Reserve-Niland, Edwards AFB, Fort Irwin Military Station, Fort Irwin Training Center-Goldstone, San Clemente Island, San Nicholas Island, Susanville Federal Prison, 29 Palms - Marine Corps, U.S. Marine Base - Barstow, U.S. Naval Air Facility - Sealey, Vandenberg AFB Army Defense Language Institute - Monterey, Fallon Air Base, Naval Post Graduate School - Monterey, Yermo Marine Corps Logistics Center
 Port Hueneme, Port Mugu, U.S. Coast Guard Station - Two Rock

 LAB00300-001 07/01/2022

	Rates	Fringes
Brick Tender.....	\$ 37.32	21.45

 LAB00300-003 07/01/2022

	Rates	Fringes
LABORER (TUNNEL)		
GROUP 1.....	\$ 45.68	23.30
GROUP 2.....	\$ 46.00	23.30
GROUP 3.....	\$ 46.46	23.30
GROUP 4.....	\$ 47.15	23.30
LABORER		
GROUP 1.....	\$ 36.39	21.04
GROUP 2.....	\$ 36.94	21.04
GROUP 3.....	\$ 37.49	21.04
GROUP 4.....	\$ 39.04	21.04
GROUP 5.....	\$ 39.39	21.04

LABORER CLASSIFICATIONS

GROUP 1: Cleaning and handling of panel forms; Concrete screeding for rough strike-off; Concrete, water curing; Demolition laborer, the cleaning of brick if performed by a worker performing any other phase of demolition work, and the cleaning of lumber; Fire watcher, limber, brush loader, piler and debris handler; Flag person; Gas, oil and/or water pipeline laborer; Laborer, asphalt-rubber material loader; Laborer, general or construction; Laborer, general clean-up; Laborer, landscaping; Laborer, jetting; Laborer, temporary water and air lines; Material hose operator (walls, slabs, floors and decks); Plugging, filling of shee bolt holes; Dry packing of concrete; Railroad maintenance, repair track person and road beds; Streetcar and railroad construction track laborers; Rigging and signaling; Scaler; Slip form raiser; Tar and mortar; Tool crib or tool house laborer; Traffic control by any method; Window cleaner; Wire mesh pulling - all concrete pouring operations

GROUP 2: Asphalt shoveler; Cement dumper (on 1 yd. or larger mixer and handling bulk cement); Cesspool digger and installer; Chucktender; Chute handler, pouring concrete, the handling of the chute from readymix trucks, such as walls, slabs, decks, floors, foundation, footings, curbs, gutters and sidewalks; Concrete curer, impervious membrane and form oiler; Cutting torch operator (demolition); Fine grader, highways and street paving, airport, runways and similar type heavy construction; Gas, oil and/or water pipeline wrapper - pot tender and form person; Guinea

chaser; Headerboard person - asphalt; Laborer, packing rod steel and pans; Membrane vapor barrier installer; Power broom sweeper (small); Riprap stonepaver, placing stone or wet sacked concrete; Roto scraper and tiller; Sandblaster (pot tender); Septic tank digger and installer(lead); Tank scaler and cleaner; Tree climber, faller, chain saw operator, Pittsburgh chipper and similar type brush shredder; Underground laborer, including caisson bellower

GROUP 3: Buggymobile person; Concrete cutting torch; Concrete pile cutter; Driller, jackhammer, 2-1/2 ft. drill steel or longer; Dri-pak-it machine; Gas, oil and/or water pipeline wrapper, 6-in. pipe and over, by any method, inside and out; High scaler (including drilling of same); Hydro seeder and similar type; Impact wrench multi-plate; Kettle person, pot person and workers applying asphalt, lay-kold, creosote, lime caustic and similar type materials ("applying" means applying, dipping, brushing or handling of such materials for pipe wrapping and waterproofing); Operator of pneumatic, gas, electric tools, vibrating machine, pavement breaker, air blasting, come-alongs, and similar mechanical tools not separately classified herein; Pipelayer's backup person, coating, grouting, making of joints, sealing, caulking, diapering and including rubber gasket joints, pointing and any and all other services; Rock slinger; Rotary scarifier or multiple head concrete chipping scarifier; Steel headerboard and guideline setter; Tamper, Barko, Wacker and similar type; Trenching machine, hand-propelled

GROUP 4: Asphalt raker, lute person, ironer, asphalt dump person, and asphalt spreader boxes (all types); Concrete core cutter (walls, floors or ceilings), grinder or sander; Concrete saw person, cutting walls or flat work, scoring old or new concrete; Cribber, shorer, lagging, sheeting and trench bracing, hand-guided lagging hammer; Head rock slinger; Laborer, asphalt- rubber distributor boot person; Laser beam in connection with laborers' work; Oversize concrete vibrator operator, 70 lbs. and over; Pipelayer performing all services in the laying and installation of pipe from the point of receiving pipe in the ditch until completion of operation, including any and all forms of tubular material, whether pipe, metallic or non-metallic, conduit and any other stationary type of tubular device used for the conveying of any substance or element, whether water, sewage, solid gas, air, or other product whatsoever and without regard to the nature of material from which the tubular material is fabricated; No-joint pipe and stripping of same; Prefabricated manhole installer; Sandblaster (nozzle person), water blasting, Porta Shot-Blast

GROUP 5: Blaster powder, all work of loading holes, placing and blasting of all powder and explosives of whatever type, regardless of method used for such loading and placing; Driller: All power drills, excluding jackhammer, whether core, diamond, wagon, track, multiple unit, and any and all other types of mechanical drills without regard to the form of motive power; Toxic waste removal

TUNNEL LABORER CLASSIFICATIONS

GROUP 1: Batch plant laborer; Changehouse person; Dump person; Dump person (outside); Swamper (brake person and switch person on tunnel work); Tunnel materials handling person; Nipper; Pot tender, using mastic or other materials

(for example, but not by way of limitation, shotcrete, etc.)

GROUP 2: Chucktender, cabledtender; Loading and unloading agitator cars;; Vibrator person, jack hammer, pneumatic tools (except driller); Bull gang mucker, track person; Concrete crew, including rodder and spreader

GROUP 3: Blaster, driller, powder person; Chemical grout jet person; Cherry picker person; Grout gun person; Grout mixer person; Grout pump person; Jackleg miner; Jumbo person; Kemper and other pneumatic concrete placer operator; Miner, tunnel (hand or machine); Nozzle person; Operating of troweling and/or grouting machines; Powder person (primer house); Primer person; Sandblaster; Shotcrete person; Steel form raiser and setter; Timber person, retimber person, wood or steel; Tunnel Concrete finisher

GROUP 4: Diamond driller; Sandblaster; Shaft and raise work

LAB00300-005 08/01/2022

	Rates	Fringes
Asbestos Removal Laborer.....	\$ 39.23	23.28

SCOPE OF WORK: Includes site mobilization, initial site cleanup, site preparation, removal of asbestos-containing material and toxic waste, encapsulation, enclosure and disposal of asbestos- containing materials and toxic waste by hand or with equipment or machinery; scaffolding, fabrication of temporary wooden barriers and assembly of decontamination stations.

LAB00345-001 07/01/2022

	Rates	Fringes
LABORER (GUNITE)		
GROUP 1.....	\$ 48.50	21.37
GROUP 2.....	\$ 47.55	21.37
GROUP 3.....	\$ 44.01	21.37

FOOTNOTE: GUNITE PREMIUM PAY: Workers working from a Bosn'n's Chair or suspended from a rope or cable shall receive 40 cents per hour above the foregoing applicable classification rates. Workers doing gunite and/or shotcrete work in a tunnel shall receive 35 cents per hour above the foregoing applicable classification rates, paid on a portal-to-portal basis. Any work performed on, in or above any smoke stack, silo, storage elevator or similar type of structure, when such structure is in excess of 75'-0"" above base level and which work must be performed in whole or in part more than 75'-0"" above base level, that work performed above the 75'-0"" level shall be compensated for at 35 cents per hour above the applicable classification wage rate.

GUNITE LABORER CLASSIFICATIONS

GROUP 1: Rodmen, Nozzlemen

GROUP 2: Gunmen

GROUP 3: Reboundmen

 LAB01184-001 07/01/2022

	Rates	Fringes
Laborers: (HORIZONTAL DIRECTIONAL DRILLING)		
(1) Drilling Crew Laborer...	\$ 40.69	18.25
(2) Vehicle Operator/Hauler.	\$ 40.86	18.25
(3) Horizontal Directional Drill Operator.....	\$ 42.71	18.25
(4) Electronic Tracking Locator.....	\$ 44.71	18.25
Laborers: (STRIPING/SLURRY SEAL)		
GROUP 1.....	\$ 41.90	21.32
GROUP 2.....	\$ 43.20	21.32
GROUP 3.....	\$ 45.21	21.32
GROUP 4.....	\$ 46.95	21.32

LABORERS - STRIPING CLASSIFICATIONS

GROUP 1: Protective coating, pavement sealing, including repair and filling of cracks by any method on any surface in parking lots, game courts and playgrounds; carstops; operation of all related machinery and equipment; equipment repair technician

GROUP 2: Traffic surface abrasive blaster; pot tender - removal of all traffic lines and markings by any method (sandblasting, waterblasting, grinding, etc.) and preparation of surface for coatings. Traffic control person: controlling and directing traffic through both conventional and moving lane closures; operation of all related machinery and equipment

GROUP 3: Traffic delineating device applicator: Layout and application of pavement markers, delineating signs, rumble and traffic bars, adhesives, guide markers, other traffic delineating devices including traffic control. This category includes all traffic related surface preparation (sandblasting, waterblasting, grinding) as part of the application process. Traffic protective delineating system installer: removes, relocates, installs, permanently affixed roadside and parking delineation barricades, fencing, cable anchor, guard rail, reference signs, monument markers; operation of all related machinery and equipment; power broom sweeper

GROUP 4: Striper: layout and application of traffic stripes and markings; hot thermo plastic; tape traffic stripes and markings, including traffic control; operation of all related machinery and equipment

 LAB01414-001 08/03/2022

	Rates	Fringes
LABORER		
PLASTER CLEAN-UP LABORER....	\$ 38.92	23.32
PLASTER TENDER.....	\$ 41.47	23.32

Work on a swing stage scaffold: \$1.00 per hour additional.

PAIN0036-001 07/01/2023

	Rates	Fringes
Painters: (Including Lead Abatement)		
(1) Repaint (excludes San Diego County).....	\$ 29.59	17.12
(2) All Other Work.....	\$ 38.52	18.64

REPAINT of any previously painted structure. Exceptions: work involving the aerospace industry, breweries, commercial recreational facilities, hotels which operate commercial establishments as part of hotel service, and sports facilities.

PAIN0036-006 09/01/2022

	Rates	Fringes
DRYWALL FINISHER/TAPER		
Antelope Valley North of the following Boundary: Kern County Line to Hwy. #5, South on Hwy. #5 to Hwy. N2, East on N2 to Palmdale Blvd., to Hwy. #14, South to Hwy. #18, East to Hwy. #395.....	\$ 42.15	23.52
Remainder of Los Angeles County.....	\$ 46.28	23.52

PAIN0036-015 01/01/2020

	Rates	Fringes
GLAZIER.....	\$ 43.45	23.39

FOOTNOTE: Additional \$1.25 per hour for work in a condor, from the third (3rd) floor and up Additional \$1.25 per hour for work on the outside of the building from a swing stage or any suspended contrivance, from the ground up

PAIN1247-002 01/01/2023

	Rates	Fringes
SOFT FLOOR LAYER.....	\$ 41.60	16.38

PLAS0200-009 08/03/2022

	Rates	Fringes
PLASTERER.....	\$ 47.37	19.64

PLAS0500-002 07/01/2020

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 38.50	25.91

PLUM0016-001 09/01/2023

Rates Fringes

PLUMBER/PIPEFITTER

Work ONLY on new additions and remodeling of bars, restaurant, stores and commercial buildings not to exceed 5,000 sq. ft. of floor space.....	\$ 53.51	25.28
Work ONLY on strip malls, light commercial, tenant improvement and remodel work.....	\$ 42.49	23.86
All other work except work on new additions and remodeling of bars, restaurant, stores and commercial buildings not to exceed 5,000 sq. ft. of floor space and work on strip malls, light commercial, tenant improvement and remodel work.....	\$ 55.18	26.26

PLUM0345-001 09/01/2023

Rates Fringes

PLUMBER

Landscape/Irrigation Fitter.....	\$ 40.20	25.90
Sewer & Storm Drain Work....	\$ 44.29	23.28

ROOF0036-002 08/01/2022

Rates Fringes

ROOFER.....	\$ 43.47	19.52
-------------	----------	-------

FOOTNOTE: Pitch premium: Work on which employees are exposed to pitch fumes or required to handle pitch, pitch base or pitch impregnated products, or any material containing coal tar pitch, the entire roofing crew shall receive \$1.75 per hour ""pitch premium"" pay.

SFCA0669-013 04/01/2022

DOES NOT INCLUDE THE CITY OF POMONA, CATALINA ISLAND, AND THAT PART OF LOS ANGELES COUNTY WITHIN 25 MILES OF THE CITY LIMITS OF LOS ANGELES:

Rates Fringes

SPRINKLER FITTER.....	\$ 43.25	26.77
-----------------------	----------	-------

SFCA0709-005 09/01/2023

THE CITY OF POMOMA, CATALINA ISLAND, AND THAT PART OF LOS ANGELES COUNTY WITHIN 25 MILES OF THE CITY LIMITS OF LOS ANGELES:

	Rates	Fringes
SPRINKLER FITTER (Fire).....	\$ 54.29	32.00

SHEE0105-002 07/01/2023		

LOS ANGELES (South of a straight line between Gorman and Big Pines including Catalina Island)

	Rates	Fringes
SHEET METAL WORKER		
(1) Light Commercial: Work on general sheet metal and heating and AC up to 4000 sq ft.....	\$ 33.10	10.56
(2) Modernization : Excluding New Construction - Under 5000 sq. ft. Does not include modification, upgrades, energy management, or conservation improvements of central heating and AC equipment.....	\$ 33.10	10.56

SHEE0105-003 07/01/2023

LOS ANGELES (South of a straight line drawn between Gorman and Big Pines)and Catalina Island, INYO, KERN (Northeast part, East of Hwy 395), MONO ORANGE, RIVERSIDE, AND SAN BERNARDINO COUNTIES

	Rates	Fringes
SHEET METAL WORKER		
(1) Commercial - New Construction and Remodel work.....	\$ 55.16	30.04
(2) Industrial work including air pollution control systems, noise abatement, hand rails, guard rails, excluding aritechtrual sheet metal work, excluding A-C, heating, ventilating systems for human comfot...	\$ 55.16	30.04

SHEE0105-004 07/01/2023

KERN (Excluding portion East of Hwy 395) & LOS ANGELES (North of a straight line drawn between Gorman and Big Pines including Cities of Lancaster and Palmdale) COUNTIES

	Rates	Fringes
SHEET METAL WORKER.....	\$ 45.98	29.24

TEAM0011-002 07/01/2023

Rates	Fringes
-------	---------

TRUCK DRIVER

GROUP 1.....	\$ 38.19	33.69
GROUP 2.....	\$ 38.34	33.69
GROUP 3.....	\$ 38.47	33.69
GROUP 4.....	\$ 38.66	33.69
GROUP 5.....	\$ 38.69	33.69
GROUP 6.....	\$ 38.72	33.69
GROUP 7.....	\$ 38.97	33.69
GROUP 8.....	\$ 39.22	33.69
GROUP 9.....	\$ 39.42	33.69
GROUP 10.....	\$ 39.72	33.69
GROUP 11.....	\$ 40.22	33.69
GROUP 12.....	\$ 40.65	33.69

WORK ON ALL MILITARY BASES:

PREMIUM PAY: \$3.00 per hour additional.

[29 palms Marine Base, Camp Roberts, China Lake, Edwards AFB, El Centro Naval Facility, Fort Irwin, Marine Corps Logistics Base at Nebo & Yermo, Mountain Warfare Training Center, Bridgeport, Point Arguello, Point Conception, Vandenberg AFB]

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Truck driver

GROUP 2: Driver of vehicle or combination of vehicles - 2 axles; Traffic control pilot car excluding moving heavy equipment permit load; Truck mounted broom

GROUP 3: Driver of vehicle or combination of vehicles - 3 axles; Boot person; Cement mason distribution truck; Fuel truck driver; Water truck - 2 axle; Dump truck, less than 16 yds. water level; Erosion control driver

GROUP 4: Driver of transit mix truck, under 3 yds.; Dumpcrete truck, less than 6-1/2 yds. water level

GROUP 5: Water truck, 3 or more axles; Truck greaser and tire person (\$0.50 additional for tire person); Pipeline and utility working truck driver, including winch truck and plastic fusion, limited to pipeline and utility work; Slurry truck driver

GROUP 6: Transit mix truck, 3 yds. or more; Dumpcrete truck, 6-1/2 yds. water level and over; Vehicle or combination of vehicles - 4 or more axles; Oil spreader truck; Dump truck, 16 yds. to 25 yds. water level

GROUP 7: A Frame, Swedish crane or similar; Forklift driver; Ross carrier driver

GROUP 8: Dump truck, 25 yds. to 49 yds. water level; Truck repair person; Water pull - single engine; Welder

GROUP 9: Truck repair person/welder; Low bed driver, 9 axles or over

GROUP 10: Dump truck - 50 yds. or more water level; Water pull - single engine with attachment

GROUP 11: Water pull - twin engine; Water pull - twin engine

with attachments; Winch truck driver - \$1.25 additional when operating winch or similar special attachments

GROUP 12: Boom Truck 17K and above

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

=====
Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the

Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

=====

END OF GENERAL DECISION

..

**NOTICE OF REQUIREMENTS FOR AFFIRMATIVE ACTION
TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY
(EXECUTIVE ORDER 11246 AND 41 CFR PART 60-4)**

The following Notice shall be included in, and shall be a part of all solicitations for offers and bids on all Federal and federally assisted construction contracts or subcontracts in excess of \$10,000.

The Offeror's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.

The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation for each trade
	%	6.9%

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is:

State of _____

County of _____

City of _____

CERTIFICATION REGARDING LOBBYING LOWER TIER COVERED TRANSACTIONS

Applicants should review the instructions for certification included in the regulations before completing this form. Signature on this form provides for compliance with certification requirements under 15 CFR Part 28, "New Restrictions on Lobbying."

LOBBYING

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 15 CFR Part 28, for persons entering into a grant, cooperative agreement or contract over \$100,000 or a loan or loan guarantee over \$150,000 as defined at 15 CFR Part 28, Sections 28.105 and 28.110, the applicant certifies that to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure occurring on or before October 23, 1996, and of not less than \$11,000 and not more than \$110,000 for each such failure occurring after October 23, 1996.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

In any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure occurring on or before October 23, 1996, and of not less than \$11,000 and not more than \$110,000 for each such failure occurring after October 23, 1996.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above applicable certification.

NAME OF APPLICANT

AWARD NUMBER AND/OR PROJECT NAME

PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

SIGNATURE

DATE

PROJECT MANUAL

for

COMMERCIAL BUILDING

TO

CHILDCARE FACILITY

2299 Pacific Avenue, Long Beach, CA 90806

FOR THE

ECONOMIC RESOURCE CORPORATION /

2299 PACIFIC AVENUE LLC

— EDA Project #: 07-79-07720 —

2600 Lynwood Way Lynwood, CA 90262

BID SET

November 27, 2023

Prepared by

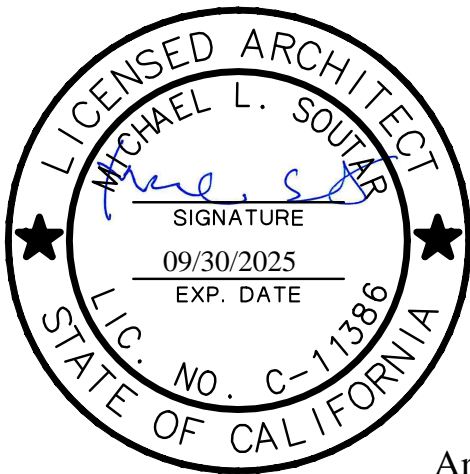
Architects *McDonald, Soutar & Paz, Inc.*

3575 Long Beach Boulevard

Long Beach, CA 90807

562/427-5007 Fax 562/427-3007

MSP #22-1293



BIDDING DOCUMENTS
TABLE OF CONTENTS

	Number of Pages
DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS	
00 0101 Project Title Page.....	01
00 0110 Table of Contents.....	05
DIVISION 01 - GENERAL REQUIREMENTS	
01 1100 Summary of Work	05
01 1216 Phasing of the Work	03
01 1219 Phasing of the Work Appendix A	07
01 2100 Allowances.....	02
01 2300 Alternates (Bid Items)	02
01 2513 Product Substitution Procedures	02
01 2613 Request for Clarification	02
01 2973 Schedule of Values	03
01 2976 Progress Payment Procedures	04
01 3113 Project Coordination.....	04
01 3119 Project Meetings	06
01 3129 Partnering	03
01 3213 Construction Schedule.....	17
01 3300 Submittal Procedures.....	09
01 3546 Indoor Quality Air Procedures	10
01 4213 Abbreviations, Symbols and Acronyms	11
01 4524 Environmental/Export Material Testing	16
01 4525 Testing, Adjusting, and Balancing for HVAC.....	28
01 5000 Construction Facilities and Temporary Controls.....	20
01 5719 CEQA Mitigations.....	06
01 6000 Product Requirements	06
01 7123 Field Engineering.....	06
01 7329 Cutting and Patching	07
01 7416 Storm Water Pollution Prevention	28
01 7417 BMP Implementation Plan	26
01 7418 Water Pollution Control	03
01 7419 Construction & Demolition Waste Management	04

01 7700	Contract Closeout	07
01 7836	Warranties	03
01 7900	Maintenance & Operations Staff Demonstration and Training	11
01 9113	General Commissioning Requirements	15

DIVISION 02 - EXISTING CONDITIONS (NOT USED)

DIVISION 03 - CONCRETE

03 0130	Restoration and Cleaning of Concrete	04
03 1000	Concrete Framework	06
03 2000	Concrete Reinforcing.....	08
03 3000	Cast-In-Place Concrete.....	15

DIVISION 04 – MASONRY (NOT USED)

DIVISION 05 - METALS

05 1200	Structural Steel Framing.....	06
05 0513	Hot Dip Galvanizing	06
05 5000	Metal Fabrications	07

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 1000	Rough Carpentry.....	08
06 2000	Finish Carpentry	04
06 4000	Architectural Woodwork.....	09

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 2100	Thermal Insulation.....	06
07 2200	Roof and Deck Insulation.....	04
07 2600	Vapor Barriers.....	04
07 2719	Plastic Sheet Air Barriers	05
07 5416	Polyvinyl-Chloride Roofing	10
07 6000	Flashing and Sheet Metal	06
07 7100	Roof Specialties	03
07 9200	Joint Sealants	07

DIVISION 08 - OPENINGS

08 1113	Hollow Metal Doors and Frames.....	13
08 3116	Access Panels and Frames.....	03
08 4113	Aluminum Entrances Storefront	07
08 4523	Sandwich Panel Skylight System.....	05

08 7100	Door Hardware	06
08 8000	Glazing.....	08
08 8053	Security Glazing	04
08 8716	Anti-Graffiti Control Film.....	04

DIVISION 09 - FINISHES

09 0561	Moisture Testing for Flooring Installation.....	06
09 2216	Non-Structural Metal Framing.....	11
09 2423	Cement Plaster and Metal Lath.....	12
09 2900	Gypsum Board	08
09 3013	Ceramic Tiling.....	12
09 5113	Acoustical Panel Ceilings.....	08
09 5123	Acoustical Tile Ceilings	02
09 6523	Luxury Vinyl Tile.....	06
09 8100	Acoustical Insulation	03
09 9000	Painting and Coatings.....	09
09 9623	Graffiti-Resistant Coatings.....	04

DIVISION 10 - SPECIALTIES

10 1100	Visual Display Units.....	06
10 1400	Signage.....	10
10 2113	Phenolic Toilet Compartments.....	10
10 2813	Toilet Accessories.....	05
10 2239	Folding Panel Partitions	04
10 2813	Toilet Accessories.....	05

DIVISION 11 – 13 – (NOT USED)

DIVISION 14 - CONVEYING EQUIPMENT

14 2426	Modular Hydraulic Passenger Elevators.....	20
---------	--	----

DIVISION 15 – 20 – (NOT USED)

DIVISION 21 – FIRE SUPPRESSION

21 1313	Fire-Suppression Sprinkler System.....	12
---------	--	----

DIVISION 22 – PLUMBING

22 0500	Common Work Results for Plumbing.....	18
22 0523	General Duty Valves	06

22 0529	Hangers and Supports for Plumbing	10
22 0553	Identification for Plumbing Piping and Equipment.....	06
22 0700	Plumbing Insulation.....	18
22 1116	Domestic Water Piping.....	01
22 1119	Domestic Water Piping Specialties.....	06
22 1316	Sanitary Waste and Vent Piping	11
22 1319	Sanitary Waste Piping Specialties.....	06
22 4000	Plumbing Fixtures.....	08

DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING

23 0500	Common Work Results for HVAC.....	11
23 0513	Basic HVAC Materials and Methods	15
23 0700	HVAC Insulations	17
23 2013	HVAC Piping.....	13
23 8000	HVAC Equipment	14
23 0529	Hangers and Supports for HVAC Piping and Equipment.....	08

DIVISION 24 - 25 – (NOT USED)

DIVISION 26 – ELECTRICAL

26 0501	General Electrical Provisions	12
26 0515	Basic Electrical Materials and Methods	11
26 0519	Low-Voltage Wires (600 Volt AC)	06
26 0526	Grounding and Bonding	05
26 0529	Hangers and Supports for Electrical Systems.....	07
26 0533	Raceways and Boxes Fitting and Supports.....	09
26 0543	Underground Ducts and Raceway for Electrical Systems.....	21
26 0553	Identification for Electrical Systems.....	11
26 0923	Lighting Control Systems.....	16
26 2416	Panelboards and Signal Terminal Cabinets	06
26 2726	Wiring Devices	12
26 2813	Fuses.....	05
26 2816	Enclosed Switches and Circuit Breakers	12
26 5000	Lighting Fixtures	11
26 5100	Interior Lighting.....	19

DIVISION 27 – (NOT USED)

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

28 1000	Access Control Systems (ACS)	27
28 3100	Fire Alarm System.....	12
DIVISION 29 - 30 – (NOT USED)		
DIVISION 31 – EARTHWORK		
31 1000	Site Clearing	02
31 1200	Demolitions.....	08
31 1216	Asphalt Paving.....	15
31 2000	Earth Moving	20
DIVISION 32 – EXTERIOR IMPROVEMENTS		
32 0117	Asphalt Pavement Repair	04
32 1216	Asphalt Paving.....	15
32 1236	Seal for Bituminous Surfacing	02
31 1313	Concrete Paving.....	21
32 1373	Concrete Joint Sealants.....	16
32 8413	Portable Water Irrigation.....	16
32 8416	Irrigation Control	06
32 9000	Planting	15
32 9400	Pavement Marking.....	03
DIVISION 33 – UTILITIES		
33 4100	Storm Utility Drainage	14

END OF TABLE OF CONTENTS

SECTION 01 1100
SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. The furnishing of all labor, materials, equipment, services, and incidentals necessary for Work of the Childcare Facility located at 2299 Pacific Avenue, Long Beach, California 90806, as set forth in the Construction Documents which include, but are not limited to, the Drawings, Addenda and Specifications.

1.02 RELATED REQUIREMENTS:

1. Section 01 1216: Phasing of the Work.
2. Section 01 2300: Alternates (Bid Items).
3. Section 01 3113: Project Coordination.
5. Section 01 3213: Construction Schedule.
6. Section 01 4525: Testing, Adjusting, and Balancing for HVAC.
7. Section 01 5000: Construction Facilities and Temporary Controls.
8. Section 01 7123: Field Engineering.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 USE OF PREMISES

- A. CONTRACTOR shall coordinate Work of all trades, Subcontractors, utility service providers, with OWNER and/or Separate Work Contract. CONTRACTOR shall sequence, coordinate, and perform the Work to impose minimum hardship on the operation and use of the existing facilities and/or Project site. CONTRACTOR shall install all necessary protection for existing improvements, Project site, property, and new Work against dust, dirt, weather, damage, vandalism, and maintain and relocate all protection to accommodate progression of the Work.

- B. CONTRACTOR shall confine entrance and exiting to the Project site and/or facilities to routes designated by the Architect.
- E. CONTRACTOR shall furnish, install, and maintain adequate supports, shoring, and bracing to preserve structural integrity and prevent collapse of existing improvements and/or Work modified and/or altered as part of the Work.
- F. CONTRACTOR shall secure building entrances, exits, and Work areas with locking devices as required.
- G. CONTRACTOR assumes custody and control of OWNER property, both fixed and portable, remaining in existing facilities vacated during the Work.
- H. CONTRACTOR shall cover and protect surfaces of rooms and spaces in existing facilities turned over for the Work, including OWNER property remaining within as required to prevent soiling or damage from dust, dirt, water, and/or fumes. CONTRACTOR shall protect areas adjacent to the Work in a similar manner. Prior to OWNER occupancy, CONTRACTOR shall clean all surfaces including OWNER property.
- I. CONTRACTOR shall not use or allow anyone other than OWNER employees to use facility telephones and/or other equipment, except in an emergency. CONTRACTOR shall reimburse OWNER for telephone toll charges originating from the facility except those arising from emergencies or use by OWNER employees.
- J. CONTRACTOR shall protect all surfaces, coverings, materials, and finished Work from damage. Mobile equipment shall be provided with pneumatic tires.
- K. CONTRACTOR is advised OWNER may award Separate Work Contracts at this Project site.
- L. CONTRACTOR shall not permit the use of portable and/or fixed radio's or other types of sound producing devices.

3.03 FURNITURE, FIXTURES AND EQUIPMENT (MATERIALS) OWNER FURNISHED CONTRACTOR INSTALLED (OFCI)

- A. Certain materials identified in the Contract Documents as OWNER Furnished CONTRACTOR Installed, OFCI, will be delivered to the Project site by the OWNER.
- B. If designated in the Contract Documents to be OWNER furnished CONTRACTOR installed, (OFCI), CONTRACTOR shall unload, store, uncrate, assemble, install, and connect OWNER supplied materials.

- C. One-Hundred and Twenty days before the date the CONTRACTOR needs to have the OFCI materials on site, CONTRACTOR shall notify OWNER of the scheduled date for needed OFCI materials. Upon delivery to Project site, CONTRACTOR shall store OFCI materials inside rooms and/or protected spaces and will be responsible for security of OFCI materials until Substantial Completion. OAR will sign receipt or bill of lading as applicable.
 - D. CONTRACTOR shall, within ten days after delivery, uncrate and/or unpack OFCI materials in presence of OWNER who shall inspect delivered items. OWNER shall prepare an inspection report listing damaged or missing parts and accessories. OWNER shall transmit one copy of the report to CONTRACTOR. OWNER will procure and/or replace missing and or damaged OFCI materials, as indicated in inspection report.
 - E. CONTRACTOR shall install OFCI materials in the locations and orientation as indicated in the Contract Documents. CONTRACTOR shall verify exact locations with OAR before final installation of OFCI materials.
 - G. CONTRACTOR shall install OFCI materials by proper means and methods to ensure an installation as recommended by the manufacturer. CONTRACTOR shall furnish and install all necessary fasteners and required blocking to properly install OFCI materials.
 - H. CONTRACTOR shall install OFCI materials with manufacturer recommended fasteners for the type of construction to which the OFCI materials are being fastened and/or anchored.
 - I. CONTRACTOR shall provide final connections of any electrical, signal, gas, water, waste, venting and/or similar items to OFCI materials. CONTRACTOR shall, prior to final connection, verify the operating characteristics of OFCI materials are consistent with the designated supply.
- 3.04 FURNITURE, FIXTURES AND EQUIPMENT (Materials) - OWNER furnished, OWNER installed (OFOI)
- A. Certain materials are identified in the Contract Documents as OWNER Furnished, OWNER Installed (OFOI)
 - B. On dates and during times designated by OWNER, CONTRACTOR shall provide clear off-loading, receiving, protected storage, and OWNER'S dumpster space areas for the use of OWNER or OWNER'S third party OFOI installation contractors. At such times, CONTRACTOR shall also make clear routes and access available to all rooms and spaces to receive OFOI materials.

- C. On dates and during times designated by OWNER, CONTRACTOR shall provide access to the elevators for use of OWNER or OWNER'S third party OFOI installation contractors.
- D. CONTRACTOR shall cooperate fully with OWNER or OWNER'S third part OFOI installation contractors.
- E. CONTRACTOR may be requested by OWNER to provide supplemental labor and equipment to support OFOI activities. Such requests must be submitted in accordance with the change order clauses of Contract.
- F. Immediately prior to mobilization of OWNER or OWNER'S third party OFOI installation contractors, OWNER shall document the condition of the Work in areas to be utilized for OFOI activities.
- G. CONTRACTOR shall not be responsible for damage caused by OWNER or OWNER'S forces. OWNER shall document the condition of the Work and report to CONTRACTOR any damage in areas utilized for OFOI activities.

END OF SECTION

SECTION 01 1216
PHASING OF THE WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for phasing of Work include logistics, phasing, and completion of designated phases prior to commencement of subsequent phases.

1.02 RELATED REQUIREMENTS

- A. Section 01 1100: Summary of Work.
- B. Section 01 1219: Phasing of Work – Appendix A.
- C. Section 01 3300: Submittal Procedures.
- D. Section 01 3113: Project Coordination.
- E. Section 01 3213: Construction Schedule.
- F. Section 01 5000: Construction Facilities and Temporary Controls.
- G. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 SUBMITTALS

- A. CONTRACTOR shall submit a Project site logistics plans in accordance with and as required by this Section.

3.02 LOGISTICS

- A. Prior to commencement of Work, CONTRACTOR shall prepare and submit to OAR, a detailed Project site logistic plan, in same size and scale of Drawings, setting forth CONTRACTOR plan of Work relative to following, but not limited to, items:

- 1 Hauling route shall be in accordance with local ordinances a truck access route to and from Project site.

2. The identification of any overhead wire restrictions for power, street lighting, signal or cable.
 3. Local sidewalk access and street closure requirements.
 4. Protection of sidewalk pedestrians and vehicular traffic.
 5. Project site fencing and access gate locations.
 6. Construction parking.
 7. Material staging or delivery areas.
 8. Material storage areas.
 9. Temporary trailer locations.
 10. Temporary service location and proposed routing of all temporary utilities.
 11. Location of temporary or accessible fire protection.
 12. Trash removal and location of dumpsters.
 13. Concrete pumping locations.
 14. Crane locations.
 15. Location of portable sanitary facilities.
 16. Mixer truck wash out locations.
 17. Traffic control signage.
 18. Perimeter and site lighting.
 19. Storm Water Pollution Prevention Plan – SWPPP.
 20. Stockpile or lay down areas.
 21. Security lighting
- B. Revised Project site logistic plan may be required by OAR for separately identified phases of Work as set forth in this Section.
- C. CONTRACTOR is responsible for securing and/or obtaining all approvals and permits from authorities having jurisdiction relative to any activities set forth in Article 3.02.A.

3.03 PHASING OF THE WORK

- A. Project will be constructed in separate Milestone increments, as identified or as described in this Section or Contract Documents. Phasing will also delineate Work to be completed in each designated phase. Unless otherwise approved or directed by OWNER, each phase shall be completed according to approved Baseline Schedule prior to commencement of next subsequent phase. CONTRACTOR shall incorporate and coordinate Work of Separate Work Contracts relative to this Project into the Phasing and Construction Schedule.
- B. CONTRACTOR shall install all necessary Work for, but not limited to, power, lighting, signal, HVAC, drainage, and plumbing systems in phased Work before completion of designated phase. All valves, pull boxes, stub outs, temporary capping, and other Work necessary for phased completion and operation of all necessary systems shall be provided whether or not such Work is specifically identified in Contract Documents.

3.04 PHASING OF THE WORK – GENERAL

- A. CONTRACTOR shall prepare Construction Schedule in order to complete Work and related activities in accordance with phasing plan as established in Appendix “A”. CONTRACTOR shall include all costs to complete all Work within Milestones or Contract Time.
- B. OWNER will be seriously damaged by not having all Work completed within Milestones or Contract Time. It is mandatory Work be complete within Milestones or Contract Time.

3.05 PHASING OF THE WORK – SPECIFIC

- A. CONTRACTOR shall prepare Construction Schedule, and shall complete following, but not limited to Milestones, as shown in Section 01 1219 – Appendix A and within designated phases in accordance with following:
 - 1. Phase 1 Mobilization – (# of days) calendar days: Milestones 1 & 3.
 - 2. Phase 2 Construction – (#days) calendar days: Milestone 2, 4-28.
 - 3. Phase 3 Administrative Closeout – (# of days) calendar days: Milestone 29.
- B. The Contract Time shall be a total of (# days) calendar days from date of commencement of Contract Time.

END OF SECTION

01 1219– PHASING OF THE WORK

APPENDIX A – MILESTONES

CONTRACTOR shall commence performance of the Contract upon the date specified in the Notice to Proceed and shall furnish sufficient forces, facilities and materials, work such hours, including extra shifts and overtime operations, so as to fully perform the Work in accordance with the following Milestones.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 1	<u>Notice to Proceed</u> : Is established in accordance with Articles 1.34 and 2.2 of the General Conditions.	As determined in the NTP.	
No. 2	<u>Critical Shop Drawings & Submittals Complete</u> : Is defined as CONTRACTOR prepared Shop Drawings and Submittals that are either critical or near critical to the overall Substantial Completion of the Project. Milestones may include, but not be limited to, DSA Deferred Approvals steel Shop Drawings, excavation support system drawings, seismic calculations, shoring system drawings, or any long lead fabrication/procurement item requiring Shop Drawings.	_____*-calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OWNER for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 3	<u>Completion of Mobilization activities:</u> Is defined as CONTRACTOR mobilization completed, logistics plan submittal and approval (access, gates, parking, trailer locations, signage), site fencing complete, temporary offices complete (trailers- fully functional with furniture, office equipment, network connection and office supplies., storage bins, dumpsters), temporary Utilities complete (water, electric, phone, sanitation, fire protection), Project signage complete, obtain all required permits, implementation of Storm Water Pollution Prevention measures, submission of CONTRACTOR Safety Plan, submission of CONTRACTOR Hazard Communication Plan.	30 calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 4	<u>Baseline Schedule Complete:</u> Is defined as an approved baseline schedule that meets all the requirements outlined in Division 01 Sections 01 3213 and 01 1216.	120 calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 5	<u>Building Pad Certification:</u> Shall be separately listed for each building and is defined as building areas excavated, graded, and surveyed in accordance with Division 01 Section 01 7123, 3.02.	_____*-calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 6	<u>Site Underground Utilities Complete:</u> Shall be separately listed for each building and is defined as all underground utilities (mechanical, electrical, and plumbing) installed from the point of supply to five feet outside the building line.	_____*-calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 7	<u>Foundations Complete:</u> Shall be separately listed for each building and is defined as all rebar, formwork, and concrete in place.	_____*-calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OWNER for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 8	<u>Structural Steel Complete</u> : Shall be separately listed for each building and is defined as steel completely erected, bolted, welded, tested.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 9	<u>Roofing System Complete</u> : Shall be separately listed for each building and is defined as roofing system completely installed.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 10	<u>Exterior Painting Complete</u> : Shall be separately listed for each building and is defined as exterior finish coat completed.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 11	<u>Utility Provider Access</u> : Shall be separately listed for each utility and for each building and is defined as complete access to all areas and rooms for electrical, water, gas, sewer, cable and telephone incoming and distribution services.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 12	<u>Permanent Lighting functional</u> : Shall be separately listed for each building and is defined as all lighting fixtures installed and wires leading to light sources, dimmers, control panels, and transformers to be completely pulled, terminated, tested, and operational with permanent and/or temporary power.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OWNER for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 13	<u>Electrical Equipment Energized</u> (Permanent Power): Shall be separately listed for each building and is defined as all major electrical equipment (transformers, MCC's, CIC's, control panels, switch boards) installed with points of contact terminated, tested and energized with permanent power.	__* calendar days after the effective date of the NTP	\$ Amounts as indicated in the Supplementary Conditions.
No. 14	<u>HVAC Equipment complete</u> : Shall be separately listed for each building and is defined as all HVAC ducting installed, system fans and units operational, controls installed and operational.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 15	<u>HVAC Test and Balance</u> : Shall be separately listed for each building and is defined as HVAC equipment fully tested and balanced with verified test and balance reports submitted to ARCHITECT.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 16	<u>Electrical UPS complete</u> : Shall be separately listed for each building and is defined as Uninterrupted Power Supply system installed, operational, tested.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 17	<u>Mechanical Room complete</u> : Shall be separately listed for each building and is defined as all mechanical equipment inside the mechanical room to be installed, operational, tested.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 18	<u>Plumbing Complete</u> : Shall be separately listed for each building and is defined as all plumbing systems installed, operational, tested.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OWNER for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 19	<u>Interior Painting Complete</u> : Shall be separately listed for each building and is defined as interior finish painting complete.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 20	<u>Computer Networking Systems</u> : Shall be separately listed for each building and is defined as all racks and cabinets, hardware components (switches, panels, UPS, routers, etc.) pathways, cables and termination hardware. System shall be installed in accordance with contract documents and shall be 200% tested for defects in installation and to verify system operation and required performances. All system “close-out” documentation and material shall be submitted and approved.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 21	<u>Intrusion Alarm System</u> : Shall be separately listed for each building and is defined as all pathways, cabling, motion detectors, main security key switch or key pad and alarm controller installed in accordance with contract documents and shall be 100% tested for proper operation and lack of defects in installation. All system “close-out” documentation and material shall be submitted and approved.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 22	<u>Public Address System</u> : Shall be separately listed for each building and is defined as all intercom/program distribution control panel, switch bank, amplifiers and speakers installed in accordance with the contract documents and shall be 100% tested for proper operation and lack of defects in installation. All system “close-out” documentation and material shall be submitted and approved.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OWNER for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 24	<u>Fire Alarm Complete</u> : Shall be separately listed for each building and is defined as fire annunciator control panel installed and completely tested, fire suppression equipment installed, egress plans submitted, and alarm system inspected by the City or County Fire Authority having jurisdiction.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 27	<u>Hardscape Complete</u> : Is defined as all asphalt/concrete, or outdoor hard surface complete in accordance with Drawings and Specifications.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 28	<u>Landscape / Irrigation Complete</u> : Is defined as all horticultural items such as trees, bushes, or grass planted in accordance with Drawings and Specifications. Inclusive of irrigation piping and controls complete, tested.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 29	<u>Owner Furnished Contractor Installed (OFCI)materials</u> : Coordination and access shall be provided to a Separate Work Contractor and/or OWNER for delivery of OFCI materials	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.
No. 30	<u>Substantial Completion</u> : Is established in accordance with the General Conditions.	_____* calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OWNER for approval.

Milestone	Description	Schedule	Liquidated Damages Amount Per Calendar Day
No. 31	<u>Contract Completion</u> : Is established in accordance with the General Conditions.	___calendar days after the effective date of the NTP.	\$ Amounts as indicated in the Supplementary Conditions.

END OF SECTION

* Milestone date to be determined by CONTRACTOR during development of the Construction Schedule and submitted to the OWNER for approval.

SECTION 01 2100

ALLOWANCES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies administrative and procedural requirements governing Contract allowances.
 - 1 Allowances as set forth in the Specifications are to be used as compensation for items as set forth in this Section. The amounts listed in the schedule or Specifications are to be included in the base bid and shall be listed separately in the Schedule of Values and Application for Payment.
- B. Type of allowances includes the following:
 - 1. Field Office Supplies as per Division 01 Section 01 5000, 3.11.

1.02 RELATED REQUIREMENTS

- A. Section 01 2973: Schedule of Values.
- B. Section 01 2976: Progress Payment Procedures.
- C. Section 01 3213: Construction Schedule.
- E. Section 01 5000: Construction Facilities and Temporary Controls.
- F. Divisions 02-32: Specifications.

1.03 ALLOWANCES

- A. Use the allowances only as authorized for OWNER purposes and only by an approved allowance disbursement form that indicate the amounts to be charged to the respective allowance amount.
- B. At Substantial Completion of the Work, credit unused amounts remaining in the allowances to the OWNER by Change Order.

1.04 ALLOWANCE DISBURSEMENT

- A. CONTRACTOR shall submit a request for allowance disbursement on an allowance disbursement form. Include all substantiating and/or required data along with the request.

- B. The request shall have the requested amount listed as an allowance disbursement without CONTRACTOR overhead and markup.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 SCHEDULE OF ALLOWANCES

- A. Include in the base bid the following allowances in the following amounts:

<u>Section</u>	<u>Description</u>	<u>Amount</u>
SECTION 01 5000.3.11	OFFICE SUPPLIES	{\$_____}

END OF SECTION

SECTION 01 2300

ALTERNATES

(Bid Items)

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. This Section specifies administrative and procedural requirements governing alternate bid items.

1.02 RELATED REQUIREMENTS:

- A. Instructions to Bidders.
- B. Bid and Acceptance Form.
- C. Section 01 1100: Summary of Work.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 SPECIFIC:

- A. Bid item is an amount proposed by bidder and stated on the Bid and Acceptance Form for certain Work defined in the Bidding Documents that may be added to or deducted from the base bid amount if OWNER decides to accept a corresponding change in either the amount of Work to be completed, the Contract Documents, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The amount added or deducted from the base bid is the net addition to or deducted from the base bid to incorporate bid item Work into the Work. Unless noted otherwise, no other adjustments are made to the Contract Amount, Milestones or the Contract Time.

3.02 PROCEDURES:

- A. CONTRACTOR shall modify or adjust affected adjacent Work as necessary to completely and fully integrate OWNER accepted bid item Work.

1. Include as part of each bid item, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the bid item.
- B. Accepted bid items are subject to the same terms and conditions as other Work of the Contract Documents.
- C. OWNER reserves the right to accept bid items for a period of ninety days after bid opening date.
- D. Schedule: A schedule of bid items is included at the end of this Section. The Contract Documents referenced in the schedule identify necessary requirements to complete the Work described as specified for each bid item.

3.03 SCHEDULE OF BID ITEMS: (See the Bidding Documents for Additional Information)

- A. Alternate Bid Item 1: **{describe each bid item in these sections and make reference to all appropriate sections, Drawings, model numbers, Etc.}**
- B. Alternate Bid Item 2:
- C. Alternate Bid Item 3:
- D. Alternate Bid Item 4:
- E. Alternate Bid Item 5:

END OF SECTION

SECTION 01 2513

PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section includes administrative and procedural requirements for handling requests for substitutions submitted 60 days after the date established in the Notice of Award and pursuant to the General Conditions.

1.02 RELATED REQUIREMENTS

- B. Section 01 3300: Submittal Procedures.
- C. Section 01 6000: Product Requirements.
- D. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 APPLICATION

- A. CONTRACTOR proposed changes in products or materials required by the Contract Documents 60 days or more after the Notice of Award are considered to be requests for substitutions. OWNER will consider requests for substitution if a product is no longer manufactured or the ARCHITECT, after a diligent search has verified that product or material is not available to CONTRACTOR. The following are not considered to be valid requests for substitutions:
 - 1. Revisions to the Contract Documents requested by ARCHITECT.
 - 2. Specified options of products included in the Contract Documents.
 - 3. Substitutions requested on a “or equal” basis.

3.02 SUBMITTALS

- A. Transmit submittals as described in related Sections for each request for substitution.

1. Identify the product to be replaced in each request. Include related Specification Section and Drawing number.
2. Provide complete documentation denoting compliance with the requirements for substitutions, and the following information, as appropriate.
 - a. A detailed comparison of significant qualities of the proposed substitution with those specified in the Contract Documents. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - b. Product Data, including Drawings, descriptions of products, fabrication, and installation procedures.
 - c. Samples, where applicable or requested.
 - d. CONTRACTOR certification the proposed substitution conforms to requirements of the Contract Documents in every respect and is appropriate for the applications indicated.
 - e. CONTRACTOR waiver of rights to an increase in the Contract Amount, Milestones and/or Contract Time that may subsequently become necessary because of the failure of the substitution to adequately perform.
3. If required, ARCHITECT will request additional information or documentation for evaluation and will notify CONTRACTOR of acceptance or rejection of the substitution.
4. ARCHITECT will review and consider request for substitution and provide a recommendation to the OWNER.
5. Where a proposed substitution involves and/or affects more than one Subcontractor, CONTRACTOR shall ensure each Subcontractor cooperates with the other Subcontractor involved to coordinate the Work, provide uniformity and consistency, and assure compatibility of all products.
6. CONTRACTOR submittal and ARCHITECT review of Shop Drawings, Product Data, material lists or Samples do not constitute an acceptable or valid request for substitution.

END OF SECTION

SECTION 01 2613
REQUEST FOR CLARIFICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Procedure for requesting clarification of the intent of the Contract Documents.

1.02 RELATED REQUIREMENTS

- A. Section 01 1100: Summary of Work.
- B. Section 01 3113: Project Coordination.
- C. Section 01 3213: Construction Schedule.
- E. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 PROCEDURE

- A. CONTRACTOR shall prepare a Request for Clarification. CONTRACTOR shall transmit the Request for Clarification to ARCHITECT.
- B. ARCHITECT response is a clarification of the intent of the Contract Documents and does not authorize changes in the Contract Amount, Milestones and/or Contract Time.
- C. A Request for Clarification may be returned with a stamp or notation "Not Reviewed," if:
 - 1. The requested clarification is ambiguous or unclear.
 - 2. The requested clarification is equally available to the requesting party by researching and/or examining the Contract Documents.
 - 3. CONTRACTOR has not reviewed the Request for Clarification prior to submittal.
- D. Allow a minimum of nine days for review and response time, after receipt by ARCHITECT. CONTRACTOR shall verify and is responsible in verifying ARCHITECT receipt of a Request for Clarification.

111001

- E. Changes or alterations to the approved drawings or specifications shall be made by means of addenda or change orders as per section 4-338 of the California Building Standards Commission's, California Administrative Code.

END OF SECTION

SECTION 01 2973
SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Procedure for submission of a certified Schedule of Values for review and approval by the OWNER.

1.02 RELATED REQUIREMENTS

- A. Section 01 2100: Allowances.
- B. Section 01 2300: Alternates (Bid Items).
- C. Section 01 2976: Progress Payment Procedures.
- D. Section 01 3113: Project Coordination.
- E. Section 01 3213: Construction Schedule.
- F. Section 01 3300: Submittal Procedures.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 PREPARATION

- A. Upon receipt of the Notice of Intent to Award, CONTRACTOR shall commence preparation of a Schedule of Values.
- B. CONTRACTOR shall coordinate the preparation of a Schedule of Values with preparation of the Construction Schedule as set forth in Section 01 3213. The corresponding values from the specification division totals on cost loaded schedule shall match with the approved Schedule of Values.
- C. Include the following Project identification on a certified Schedule of Values:
 - 1. Project name and location.
 - 2. Project Number.

3. Contract #.
 4. CONTRACTOR name.
 5. Date of Submittal.
- D. The Schedule of Values shall be in tabular form with separate columns and shall include the following items:
1. Related Specification Section and Division.
 2. Description of Work.
 3. Name of Subcontractor, manufacturer or supplier.
 4. Dollar value, quantity and unit of measure of each line item.
 5. Percentage of Contract amount to nearest one-hundredth percent, adjusted to total 100 percent.
- E. Round amounts to the nearest whole dollar; the total shall equal the Contract Amount.
- F. Provide a breakdown of the Contract Amount in enough detail acceptable to OAR to facilitate continued evaluation of Application for Payment and progress reports. Coordinate with the Project Manual table of content and Schedule of Values form under Section 01 3229. Provide line items for subcontract amounts, where appropriate.
- G. Provide separate line items for items in the Schedule of Values for total installed value of that part of the Work.
- H. Provide separate line item for labor and material when required by the OWNER.
- I. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item except the amounts shown as separate line items as indicated under Schedule of Values form under Section 01 3229.
- J. Temporary facilities and other cost items that are not direct cost of actual work-in-place shall be shown as separate line items as indicated under Schedule of Values form under Section 01 3229.
- K. An approved certified Schedule of Values shall serve as the basis for the monthly certified Application for Payment.
- L. If at any time, OWNER determines, in its reasonable discretion, that the schedule of Values does not approximate the actual cost being incurred by

CONTRACTOR to perform the Work, CONTRACTOR shall prepare, for approval, a revised Schedule of Values, which then shall be used as the basis for future progress payments. Without changing the Contract Amount, OWNER reserves the right to require CONTRACTOR:

1. To increase or decrease amounts within the line items in the Schedule of Values; and,
2. To conform the price breakdown to OWNER accounting practice.

3.02 SUBMITTAL

- A. CONTRACTOR shall submit five certified copies of a Schedule of Values for review and approval by the OWNER at least 14 days before the first Application for Payment.
- B. OWNER will review and if necessary, return the submitted Schedule of Values with summary comments noting items not in compliance with the requirements of the Contract Documents. CONTRACTOR shall revise the submitted Schedule of Values and return five copies within three days of receipt of summary comments.
- C. Signature by OWNER shall constitute acceptance of the submitted Schedule of Values.
- D. An approved copy of the Schedule of Values will be transmitted to CONTRACTOR.

END OF SECTION

SECTION 01 2976

PROGRESS PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. This Section specifies administrative and procedural requirements for a certified Application for Payment.
 - 1. Coordinate the certified Schedule of Values and certified Application for Payment with, but not limited to, the Construction Schedule, submittal log, and list of Subcontractors.

1.02 RELATED REQUIREMENTS:

- A. Section 01 2100: Allowances.
- B. Section 01 2300: Alternates (Bid Items).
- C. Section 01 2973: Schedule of Values.
- D. Section 01 3213: Construction Schedule.
- F. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 APPLICATION FOR PAYMENT

- A. Each certified Application for Payment shall be consistent with previous applications and payments as paid for by OWNER, and:
 - 1. The initial Application for Payment and Final Application for Payment at time of Substantial Completion involve additional requirements.
- B. Payment Application Times: The period of Work covered by each Application for Payment is payment date for each progress payment as specified in the General Conditions. The period covered by each Application for Payment is previous month.

- C. Payment Application Forms: Use OWNER provided forms for the Application for Payment.
- D. Application Preparation: Complete every entry on the form. Include execution by a person authorized to sign legal documents on behalf of CONTRACTOR. OWNER will return incomplete applications without action.
- E. Transmittal: Submit a minimum of four signed and original copies of each certified Application for Payment to OWNER. All copies shall be complete, including releases and similar attachments.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to OWNER.
- F. Initial Application for Payment within 60 days of issuance of Notice to Proceed: Administrative actions and submittals, that must precede or coincide with submittal for first certified Application for Payment include, but are not limited to, the following:
 - 1. Certified Schedule of Values.
 - 2. Performance and payment bonds.
 - 3. List of principal suppliers and fabricators.
 - 4. Worker Compensation certificates, if applicable.
 - 5. Auto Insurance, if applicable.
 - 6. Hazardous Material Insurance Certificates, if applicable.
 - 7. Construction Schedule.
 - 8. Submittal Schedule.
 - 9. Emergency Contact List.
 - 10. Copies of authorizations and licenses from governing authorities for performance of Work.
 - 11. Certified Payroll.
 - 12. Storm Water Pollution Prevention Plan (SWPPP).
 - 13. Certification of Compliance with CEQA Mitigations.

- G. Applications for Payment: Administrative actions and submittals that must precede or coincide with submittal of Progress Applications for Payment include, but are not limited to, the following:
1. Certified Payroll.
 2. Updated and current Project Record Drawings (as-built).
 3. Monthly Construction Schedule (updated, submitted and approved).
 4. Approved Schedule of Values.
 5. List of Subcontractors (Payments Summary).
 6. Storm Water Pollution Prevention (SWPP) – Site Monitoring Report.
 7. Certification of Compliance with CEQA Mitigations.
- H. Final Application for Payment at Substantial Completion: Following issuance of certificate of Substantial Completion, submit an Application for Payment:
1. Administrative actions, submittals and/or Work that shall precede or coincide with this application include:
 - a. Occupancy permits and similar approvals by authorities having legal jurisdiction over Work.
 - b. Removal of temporary facilities and services.
 - c. Testing, adjusting and balance records.
 - d. Removal of surplus materials, rubbish, and similar elements.
 - e. Meter readings.
 - f. Start-up performance reports.
 - g. OWNER training and orientations.
 - h. Operating and maintenance instruction manuals.
 - i. Preliminary Warranties, guarantees and maintenance agreements.
 - j. Delivery of extra materials, products and or stock.
 - k. Change over information related to OWNER occupancy, use, operation, and maintenance.

- l. Final cleaning.
- m. Ensure that Work is completed.
- n. Advise on shifting insurance coverage.
- o. List of defective Work, recognized as exceptions to certificate of Substantial Completion.
- p. Change of door locks, including keys, to OWNER system.
- q. Certified Payroll (submitted directly to Labor Compliance in electronic format as specified by the OWNER including hard copy).
- r. Certification that all benefit contributions due and owing to appropriate union trusts has been paid by CONTRACTOR and Subcontractors.
- s. Storm Water Pollution Prevention – Site Monitoring Reports, SWPP revisions, compliance certifications, and Notice of Termination (NOT) (see Section 01 7416).
- t. Certification of Compliance with CEQA Mitigations.
- u. Waivers and releases for CONTRACTOR.

END OF SECTION

SECTION 01 3113

PROJECT COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies administrative and procedural requirements necessary for coordinating Work operations including, but not limited to, the following:
 - 1. General coordination procedures.
 - 2. Coordination drawings.

1.02. RELATED REQUIREMENTS

- A. Section 01 1216: Phasing of the Work.
- B. Section 01 3213: Construction Schedule.
- C. Section 01 3300: Submittal Procedures.
- D. Section 01 4523: Test and Inspection.
- E. Section 01 4525: Testing, Adjusting, and Balancing for HVAC.
- F. Section 01 7700: Contract Closeout.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 COORDINATION

- A. CONTRACTOR shall coordinate operations included in various sections of Contract Documents to assure efficient and orderly installation of each part of Work. Coordinate Work operations included under related sections of Contract Documents that depend on each other for proper installation, connection, and operation of Work, including but not limited to:
 - 1. Schedule construction operations in sequence required where installation of one part of Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
 3. Provide provisions to accommodate items scheduled for later installation.
 4. Prepare and administer provisions for coordination drawings.
- B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required in notices, reports, attendance at meetings, and:
1. Prepare similar memoranda for Separate Work Contract where coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of Work. Such administrative activities include, but are not limited to, following:
1. Preparation of schedules.
 2. Installation, relocation, and removal of temporary facilities.
 3. Delivery and processing of submittals.
 4. Progress meetings.
 5. Project closeout activities.
- D. Conservation: Coordinate Work operations to assure operations are carried out with consideration given to conservation of energy, water, materials, and:
1. Salvage materials and equipment involved in performance of, but not actually incorporated into Work.

3.02 SUBMITTALS

- A. Coordination Drawings: CONTRACTOR shall prepare coordination drawings to coordinate the installation of products and materials fabricated, furnished and installed by separate entities, under different parts of the Contract. CONTRACTOR shall notify ARCHITECT of all major conflicts in writing in a timely manner so that the design team can respond without construction delays. Coordination drawings shall address the following at a minimum:
1. Limitations in available space for installation or service. CONTRACTOR shall overlay plans of each trade and verify space requirements and conflicts between trades. Minor changes and adjustments that do not

affect design intent shall be made by CONTRACTOR and shall be highlighted for ARCHITECT'S review.

2. Incompatibility between items provided under different trades (such as difference in voltage between equipment specified under Divisions 22 and 23 and electrical power provided under Division 26.)
 3. Inconsistencies between drawings, specifications and codes (between trades and within each trade).
 4. Additional items required for existing facilities construction projects shall be designed and prepared from available as-built drawings that are verified through non-invasive and non-destructive, visual observation only. CONTRACTOR shall field verify actual existing conditions during and upon completion of demolition work and incorporate findings into preparation of co-ordination drawings. Minor changes and adjustments that do not affect design intent shall be made by Sub-Contractor and shall be highlighted for ARCHITECT'S review.
- B. Prepare coordination drawings in CAD with each trade on a separate layer, in specified color and scale. CONTRACTOR and each Subcontractor shall provide and forward reproducible copies and CAD drawing files in the order described here:
1. Structural shop drawings shall indicate location and sizes of columns, beams and other structural members, as well as wall, roof and slab penetrations, and will be provided to mechanical, electrical, low voltage and plumbing Sub-contractors for co-ordination. Structural items shall be indicated using black lines.
 2. HVAC Subcontractor will indicate all ductwork, piping and equipment complete with installation and dimensioned service clearances, duct and pipe sizes, fitting types and sizes, top or bottom of duct and pipe elevations, distances of ducts, pipes and equipment from building reference points and hanger and support locations. Minor changes and adjustments that do not affect design intent shall be made by Subcontractor and shall be highlighted for ARCHITECT'S review. Forward drawings to plumbing Subcontractor for further co-ordination. HVAC items shall be indicated using orange lines.
 3. Plumbing Subcontractor will indicate all plumbing lines, and equipment complete with installation and dimensioned service clearances, pipe sizes, fitting types and sizes, top or bottom of pipe elevations, distances of pipes and equipment from building reference points and hanger/support locations Co-ordinate with HVAC Subcontractor. Minor changes and adjustments that do not affect design intent shall be made by Sub-

contractor and shall be highlighted for ARCHITECT'S review. All Plumbing items shall be indicated using blue lines.

5. Electrical and Low Voltage Subcontractors will indicate service and feeder conduit runs and other electrical equipment complete, including low voltage with installation and dimensioned service clearances, sizes, top or bottom of conduit and rack elevations, distances of conduits and equipment from building reference points and hanger and support locations. Co-ordinate with Fire Sprinkler, Plumbing and HVAC Subcontractors. Minor changes and adjustments that do not affect design intent shall be made by sub-contractors and shall be highlighted for ARCHITECT'S review. Upon completion drawings shall be forwarded to CONTRACTOR for further co-ordination. Electrical work shall be indicated in dark green lines. Low voltage work shall be indicated in light green lines.
6. CONTRACTOR will be responsible for the overall coordination review. As each coordination drawing is completed, CONTRACTOR will meet with ARCHITECT to review and resolve all conflicts on coordination drawings.
7. Coordination meetings will be held in Project field office of CONTRACTOR. CONTRACTOR is required to distribute Shop Drawings, cut sheets and submittals to Subcontractors where appropriate. Reviewed coordination drawings will be maintained in Project field office of CONTRACTOR. Meeting minutes shall be developed by CONTRACTOR and submitted to ARCHITECT within 5 days.

END OF SECTION

SECTION 01 3119
PROJECT MEETINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies administrative and procedural requirements for Project meetings, including but not limited to, the following:
 - 1. Job start meeting.
 - 2. Pre-installation conferences.
 - 3. Progress meetings.
 - 4. Meetings as required by OAR.

1.02 RELATED REQUIREMENTS

- A. Section 01 1216: Phasing of the Work.
- B. Section 01 3113: Project Coordination.
- C. Section 01 3213: Construction Schedule.
- E. Section 01 3300: Submittal Procedures.

PART 2 – PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 JOB START MEETING

- A. In accordance with General Conditions, ARCHITECT will schedule a job start meeting before starting the Work, at a time and date determined by ARCHITECT. Meeting shall be held at the Project site or another location as determined by ARCHITECT. Meeting will be held in order to review responsibilities, procedures, and other administrative requirements contained within the Contract Documents.
- B. Authorized representatives of OWNER, ARCHITECT, CONTRACTOR and other parties shall attend the meeting. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.

- C. Agenda items shall include significant items which could affect progress of the Work, including, but not limited to the following:
1. Preliminary Construction Schedule.
 2. Critical work sequencing.
 3. Designation of responsible personnel.
 5. Procedures for processing field decisions.
 6. Request for Proposal.
 7. Request for Clarification.
 8. Construction Directive and Change Order.
 9. Procedures for processing Applications for Payment.
 10. Prevailing wages.
 11. Submittal and review of Shop Drawings, Product Data, material lists, and Samples.
 12. Preparation of project record documents.
 13. Use of the Project site and/or premises.
 14. Parking availability.
 15. Office, work, and storage areas.
 16. Equipment deliveries and priorities.
 17. Safety procedures.
 18. First Aid.
 19. Security.
 20. Housekeeping.
 21. Working hours.
 23. Insurance Services.
 24. Environmental Health and Safety.

25. Substantial Completion, Administrative Closeout and Contract Completion requirements and procedures.
 26. Procedures for Mandatory Dispute and Claim Resolution.
 27. Storm Water Pollution Prevention Plan (SWPPP).
 28. CEQA Compliance.
- D. ARCHITECT shall prepare and issue meeting minutes to attendees and interested parties no later than five calendar days after the meeting date.

3.02 PRE-INSTALLATION CONFERENCES

- A. CONTRACTOR shall coordinate and conduct pre-installation conferences at the Project site as required by related Sections of the Contract Documents.
- B. CONTRACTOR, manufacturers, and fabricators involved in or affected by the installation and its coordination or integration with other pre-ceding and/or subsequent installations of Work shall attend the meeting. CONTRACTOR shall advise ARCHITECT of scheduled meeting dates in order to secure their attendance.
1. CONTRACTOR shall review the progress of construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related Construction Directives and Change Orders.
 - d. Purchases.
 - e. Deliveries.
 - f. Shop Drawings, Product Data, and quality-control samples.
 - g. Review of mockups.
 - h. Possible conflicts.
 - i. Compatibility problems.
 - j. Time schedules.
 - k. Weather limitations.

- l. Manufacturer's recommendations.
 - m. Warranty requirements.
 - n. Compatibility of materials.
 - o. Acceptability of substrates.
 - p. Temporary facilities.
 - q. Space and access limitations.
 - r. Governing regulations.
 - s. Safety.
 - t. Inspecting and testing requirements.
 - u. Required performance results.
 - v. Recording requirements.
 - w. Protection.
2. CONTRACTOR shall record significant discussions and directives received from each conference. CONTRACTOR shall, within three (3) calendar days after the meeting date, distribute the minutes of the meeting to all concerned parties, including but not limited to, OWNER and ARCHITECT.

3.03 PROGRESS MEETINGS

- A. Progress meetings will be held at the Project site at regular intervals, typically weekly, as determined by the ARCHITECT.
- B. In addition to representatives of CONTRACTOR, OWNER, and ARCHITECT, each Subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of the Work shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude all matters relating to the Work.
- C. Failure of CONTRACTOR to be so represented at any progress meeting which is held at a mutually agreed time or for which a written notice is given, shall not relieve CONTRACTOR from abiding by any and all determinations or directives issued at such meeting.

D. ARCHITECT will review and correct or approve minutes of the previous progress meeting and will review other significant items affecting progress. Topics for discussion as appropriate to the status of the Project include but are not limited to:

1. Interface requirements.
2. Construction Schedule.
3. Sequence and coordination.
4. Status of submittals / RFCs.
5. Deliveries.
6. Off-site fabrication.
7. Access.
8. Site utilization.
9. Temporary Construction Facilities and Controls.
10. Hours of work.
11. Hazards and risks.
12. Housekeeping.
13. Quality of materials, fabrication, and execution.
14. Unforeseen conditions.
15. Testing and Inspection.
16. Defective Work.
17. Construction Directive.
18. Request for Proposal.
19. Change Order Proposals and Change Orders.
20. Documentation of information for payment requests.
21. Application for Payment.
22. Other items as required or as brought forth.

- 23. Initial Notice of Start of Issue, Event, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration.
 - 24. Final Notice of End of Issue, Event, Condition, Circumstance, or Cause of Perceived Delay, Disruption, Interference, Hindrance, Acceleration.
 - 25. Storm Water Pollution Prevention.
 - 26. CEQA Compliance.
- E. No later than three (3) calendar days after each progress meeting, ARCHITECT will prepare and distribute minutes of the meeting to each present and absent party. Include a brief summary, in narrative form, of progress, decisions, directives, actions taken, and all other issues since the previous meeting and report.
- 1. Schedule Updating: CONTRACTOR shall revise the Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized, and issue the revised schedule at the next scheduled progress meeting.

3.04 ADDITIONAL MEETINGS

- A. ARCHITECT, upon giving notice to the intended parties and without further obligation, may require additional meetings to discuss Work and/or Project related activities.

3.05 OWNER'S RIGHT TO RECORD

- A. CONTRACTOR agrees on behalf of itself and all its subcontractors that the OWNER may audiotape or videotape any meetings, training and any work at any time during the Project

END OF SECTION

SECTION 01 3213
CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Required procedures, preparation, submittals, reviews, updates, and revisions to the cost/schedule integrated construction schedule. The purpose of this section is to:
 - 1. Ensure adequate planning and execution of the Work by CONTRACTOR.
 - 2. Establish a standard against which satisfactory completion of the Project can be measured by OWNER.
 - 3. Assist CONTRACTOR and ARCHITECT in monitoring progress.
 - 4. Aid in assessing the impact of any changes to the Contract.
 - 5. Provide justification for progress payments.

1.02 RELATED REQUIREMENTS

- A. Section 01 1100: Summary of Work.
- B. Section 01 1216: Phasing of the Work.
- C. Section 01 2300: Alternates (Bid Items).
- D. Section 01 2973: Schedule of Values.
- E. Section 01 2976: Progress Payment Procedures.
- F. Section 01 3113: Project Coordination.
- G. Section 01 3300: Submittal Procedures.
- H. Section 01 4523: Testing and Inspection.
- I. Section 01 4525: Testing, Adjusting, and Balancing for HVAC.
- J. Section 01 5000: Construction Facilities and Temporary Controls.
- K. Section 01 7700: Contract Closeout.
- L. Section 01 7836: Warranties.

PART 2 – PRODUCTS

2.01 SCHEDULING SOFTWARE

- A. CONTRACTOR shall utilize the latest version of Primavera Scheduling Software (P6) to employ the Critical Path Method (CPM) in the development and maintenance of the construction schedule. If the version of Primavera Scheduling Software (P6) used is greater than Version 15.1, the CONTRACTOR shall save &

export schedules in Version 15.1 before submitting to OWNER for review. The scheduling software shall be capable of being resource loaded with manpower, costs and materials. It shall also be capable of generating time-scaled logic diagrams, resource histograms and profiles, bar charts, layouts and reports with any and/or all activity detail.

- B. All schedule calculation rules, auto cost rules and resource calculation rules shall be in a format acceptable to OWNER. When schedule calculations are performed, the “Retained Logic” setting shall be used. CONTRACTOR shall use the zero “Decimal Places” setting.

PART 3 – EXECUTION

3.01 SUBMITTALS

- A. CONTRACTOR shall retain a construction scheduler to work in enough capacity to perform all of the requirements outlined in this Section. CONTRACTOR shall submit a resume of the proposed Scheduler for review and acceptance prior to the preparation of any Schedule. The resume shall demonstrate the proposed scheduler’s capability to plan, coordinate, execute, and monitor a cost/resource loaded CPM schedule as required for this Project and have a minimum of five years direct experience using Primavera Project Planner. Scheduler will cooperate with OWNER and shall be available on site for monitoring, maintaining and updating schedules in a timely manner. OWNER has the right to refuse to accept the Scheduler based upon a lack of experience as required by this Section or based on lack of on-site performance and timeliness of schedule submittals. If OWNER does not accept the proposed Scheduler, CONTRACTOR shall within one week of disapproval, propose another scheduler who meets the experience requirements stated above.
- B. CONTRACTOR shall submit two color originals and three copies of all bar charts, reports and/or other required schedule data as outlined in this Section. CONTRACTOR shall electronically deliver the schedule file in its original format at the time of submittal.
- C. CONTRACTOR shall attend a pre-construction scheduling conference with OWNER within 7 days after Notice of Award. Contractor shall then develop and submit the Preliminary Construction Schedule within 14 days after Notice of Award. .
- D. CONTRACTOR shall submit the Proposed Baseline Schedule no later than thirty days from the Notice to Proceed (or as stipulated in the milestones under Section 01 1219 Phasing of the Work Appendix A).
- E. CONTRACTOR shall submit the Monthly Schedule Updates, Four-Week Rolling Schedules, and Recovery Schedules as required.

3.02 PRELIMINARY CONSTRUCTION SCHEDULE

- A. The purpose of the cost-loaded Preliminary Construction Schedule is to provide an interim mechanism in which to measure performance on individual activities and to validate the CONTRACTOR'S monthly Application for Payment on work performed (starting with month one) during the first three months of the job until the complete Baseline Schedule is approved by the OWNER.
- B. CONTRACTOR shall develop and submit a cost loaded Preliminary Construction Schedule as required by this Section. It shall be submitted in computer generated network format and shall be organized by Activity Codes representing the CONTRACTOR'S intended sequencing of the Work. The Preliminary Construction Schedule shall include activities for the first 90 calendar days following the NTP such as mobilization, preparation of submittals, specified review periods, procurement items, fabrication items, milestones, and detailed construction activities.
- C. Upon OWNER'S acceptance of the Preliminary Construction Schedule, CONTRACTOR shall update the accepted Preliminary Construction Schedule each month (beginning with month 1) and submit these updates until CONTRACTOR'S Baseline Schedule is fully developed and accepted. Since updates to Preliminary Construction Schedule are the basis for payment to CONTRACTOR during the first three-month period, submittal and acceptance of such updates shall be a condition precedent to making of monthly payment, as referenced in General Conditions.
- D. Provide a written narrative describing CONTRACTOR'S approach to mobilization, procurement, and construction during the first 90 calendar days including crew sizes, equipment and material delivery, site access, submittals, and permits.
- E. Submit Bar Charts, Tabular Reports, a Cost flow Histogram, Electronic Data, and Plots in accordance with Article 3.04-L.
- F. If the project is of a short duration and it would be more beneficial for the CONTRACTOR to forego the preliminary 90 day schedule, then upon CONTRACTOR request and OWNER written Approval, the CONTRACTOR may go straight into development of the Baseline Schedule for the entire project. This will need to be implemented expeditiously in order to not impede the processing of the monthly pay applications. Approval of the Baseline schedule and first monthly update is precedent of the monthly pay application.

3.03 SCHEDULE OF VALUES

- A. CONTRACTOR shall cost load activities in the Construction Baseline Schedule and allocate costs to the cost accounts of all activities. The cost accounts shall match the CSI sections listed in the Table Of Contents of the Specifications. The format shall be coordinated with Specification Section 01 2973 (Schedule of Values), and Specification Section 01 2976 (Progress Payment Procedures).
- B. Submit a computer generated report from the Construction Baseline Schedule using the P3/P6 scheduling software. The report shall contain the following data for each activity: Cost Account Number (by CSI section), Cost Account Description, Cost

Account Budget, Cost to Date, Cost this Period, and Cost to complete. Total costs shall be organized and totaled by CSI section. This report shall be the source of the data CONTRACTOR reports on the Schedule of Values.

- C. The cost loading associated with the activities shall be based on CONTRACTOR estimates of costs that CONTRACTOR will incur performing the specific activities. If OWNER determines that the costs are front loaded and/or the distribution of costs is unreasonable, CONTRACTOR shall revise accordingly and resubmit the Schedule of Values within five (5) days for OWNER review.

3.04 BASELINE SCHEDULE CPM NETWORK

- A. No later than thirty days from the Notice to Proceed (or as stipulated in the milestones under Section 01 1219 Phasing of the Work Appendix A), CONTRACTOR shall submit a detailed Proposed Baseline Schedule that covers the entire duration of the Project. This schedule shall convey CONTRACTOR'S plan for organizing, managing, and executing the Work.
- B. The Proposed Baseline Schedule shall include activity descriptions, sequencing, logic relationships, duration estimates, cost loading by CSI section in accordance with Article 3.03, resource loading of manpower, and other information as set forth in this Section.
 1. The Proposed Baseline Schedule shall include all Milestones stipulated in Specification Section 01 1219, Phasing of the Work, Appendix A, as well as all activities required to achieve timely completion of the Milestones.
 2. The Proposed Baseline Schedule shall include activities for: all construction activities, the NTP, Milestones, submittals, coordination drawings, re-submittals, procurement of materials and equipment, manufacturing, fabrication & delivery, owner furnished contractor installed items (OFICI), access restrictions, work restrictions, phased occupancy, testing, start-up, and contract closeout activities. The Proposed Baseline Schedule shall allow a period for OWNER and ARCHITECT to review each submittal, as required by Section 01 3300 and other sections which require additional time for OWNER reviews and deferred submittal reviews.
 3. The Proposed Baseline Schedule shall include start and completion dates for: temporary facilities, construction of mock-ups, prototypes, samples, punch list, OWNER interfaces and furnishing of items, separate work contracts, regulatory agency approvals, and permits required for performance of the Work.
 4. The Proposed Baseline Schedule shall allow for all foreseeable factors and risks which affect performance of the Work. Include allowances for weather conditions in accordance with Article 3.04-J, applicable laws, transportation, traffic, air quality, noise, or any other applicable regulatory requirements, regulations or collective bargaining agreements pertaining to labor.

5. The Proposed Baseline Schedule shall include an activity with a minimum review period of one hundred days for all Deferred Approvals. In addition, as a predecessor to this activity, a separate 18 day OWNER review period shall be included in the Proposed Baseline Schedule.
 6. CONTRACTOR shall not use any float suppression techniques such as preferential sequencing or logic, special hidden lag time between activities or milestones, float absorption activities, or unjustifiable over-estimating of activity durations in preparing the Proposed Baseline Schedule. Finish Milestones should be constrained to either a "Finish No Later Than" constraint or a "Finish on or before" constraint. . No "Zero Free Float" constraints, No "Early" Constraints, and No "Mandatory Finish" constraints shall be utilized.
 7. The Proposed Baseline Schedule shall include activity durations based on the crew sizes and equipment utilization that CONTRACTOR will maintain during the Project. No activity durations shall exceed fifteen (15) working days unless approved by the OWNER. Non-construction activities such as procurement, delivery, or submittal activities are exempted. CONTRACTOR will need to perform their due-diligence to make sure that the activity man-power loading and activity durations are directly integrated.
 8. CONTRACTOR shall include with the Proposed Baseline Schedule a written narrative report sufficiently comprehensive to explain the rationale behind CONTRACTOR'S approach to the Work including but not limited to: activity durations, manpower flow, average crew sizes (by trade), equipment requirements, anticipated production rates, constraints, holidays and other non-work days, potential problem areas, permits, coordination with regulatory authorities, utilities, separate work contracts and other parties, and long lead delivery items requiring more than thirty days from the date of order to delivery to the Project site.
- C. At the OWNER'S request, furnish a detailed written explanation of CONTRACTOR'S basis for specific durations, logic, phasing, or other information. Such an explanation shall include CONTRACTOR'S rationale for selecting the number of crews, crew composition, number of shifts per day, number of hours in a shift, number of work days per week, construction equipment, and similar factors.
- D. The Proposed Baseline Schedule activities shall contain the following data:
1. Activity ID numbers shall consist of no more than eight alphanumeric characters. Following OWNER acceptance of the Baseline Schedule, Activity ID numbers shall not be changed.
 2. Activity Descriptions shall provide adequate information that readily identifies each activity, work scope, and location.

3. At a minimum, activity codes specified in Article 3.04-G shall be applied to each activity. This is at the activity level and is different than WBS coding structure.
 4. Cost accounts (in CSI MasterFormat) and Resource accounts shall be applied to each activity. They shall include lump sum costs, and man-hours/man-days (where applicable).
- E. At OWNER’S request, furnish a written explanation for each lead or lag relationship and each constrained date. Unjustifiable leads, lags, and constraints will result in OWNER’S rejection of the Proposed Baseline Schedule.
- F. Calendar Identification: In the scheduling software, identify all activities that will require overtime shifts, double shifts, and work on weekends or holidays. Identify non-work days and holidays in the schedule calendar. All milestones stipulated in Specification Section 01 1219, Phasing of the Work, Appendix A, shall be placed on a calendar with seven days per week. No holiday or non work-day restrictions are permitted on this calendar. Within the schedule software, the CONTRACTOR shall not use Primavera Global Calendars from past projects, but rather shall use project specific calendars created for this specific contract. The Calendar coding shall be transferable and compatible with the OWNER calendars as to not distort any start/finish dates and “total float” values upon schedule re-calculation.
- G. Activity Codes: As a minimum, the Activity Codes shown in the Table 1 below shall be assigned to each activity.

Table 1

Name	Length	Description
TYPE	2	Type of activity (for example: mobilization, submittals, procurement/fabrication, construction, milestones, etcetera.)
AREA	2	Area or Building (for example: Bldg A, Building B, Courtyard, Athletic Fields, Street Work, etcetera.)
STAG	2	Stage (for example: Foundations, Superstructure, Exterior, Interior, Roof, Floor Number etcetera.)
SBST	2	Substage (a specific area within a stage such as: main electrical room, kitchen, room number, etcetera.)
RESP	7	Responsible Party (subcontractor and/or trade)
SPEC	5	CSI section number

1. OWNER may require additional coding of activities. The mandatory activity code requirements listed in Table 1 are not to be construed as setting limits on CONTRACTOR’S management and coordination responsibilities, but are intended to guide CONTRACTOR in the administration of its contractual responsibilities.
- H. Milestones: are designated dates as set forth in Specification Section 01 1219, Phasing of the Work, Appendix A, in which Work or portions thereof are required to start and complete in accordance with the Contract Documents.

1. Where the term completion or similar terms are used in regards to a Milestone, it shall be construed to mean all portions of the Work in the indicated phase, area, and zone are complete and acceptable to OWNER. Where the term start or similar terms are used in the designation of a Milestone, it shall be construed to mean a portion of the Work in the indicated phase, area, or zone is required to be commenced.
 2. A Proposed Baseline Schedule extending beyond the Milestones or Contract Time will not be acceptable.
 3. Finish Milestones shall be constrained with Late Finish (“Finish No Later Than”) type constraints or “Finish on or before” type constraints in accordance with the dates stipulated in Specification Section 01 1219, Phasing of the Work, Appendix A.
 4. In the scheduling software, under the Project Overview command, assign the “Project Must Finish By” date to match the Contract Completion Milestone date stipulated in Specification Section 01 1219, Phasing of the Work, Appendix A.
 5. A Proposed Baseline Schedule indicating Work completed in less time than the Milestones and/or Contract Time will not be acceptable. Rather, CONTRACTOR shall show any unused contract time as float available to the project.
 6. Milestones shall be placed on a calendar with seven days per week. No Holiday or non work-day restrictions are permitted on this calendar.
- I. The Critical Path shall be clearly indicated on all schedules submitted. An activity is defined as critical when it is shown to be on the longest path from beginning to end.
 - J. CONTRACTOR shall allow for inclement weather in the Proposed Baseline Schedule by incorporating an activity titled “Rain Day Impact Allowance” as the last activity prior to the Substantial Completion Milestone. No other activities may be concurrent with it. The duration of the Rain Day Impact Allowance activity will be based on Table #2 below, and will be calculated from the Notice to Proceed until the original date of Substantial Completion.

Table 2: Cumulative Calendar Days “Rain Day Impact Allowance”:

January	6	July	0
February	5	August	0
March	5	September	1
April	4	October	1
May	1	November	3
June	0	December	5

1. When inclement weather at the Project site impacts Critical Path activities, CONTRACTOR may provide the OWNER with a written request for a weather impact day describing the inclement weather delay on the Critical Path activities. The inclement weather delay must be clearly indicated by a 70 percent decrease in the field labor workforce hours on Critical Path activities on the day in question as indicated by CONTRACTOR'S Daily reports from the day in question and the scheduled work days prior to the day in question. Upon OWNER'S independent confirmation of the amount of rainfall and impact, OWNER will authorize CONTRACTOR to reduce the duration of the Rain Day Impact Allowance by one day.
2. Inclement weather on non-scheduled workdays shall not be granted as weather impact days. If CONTRACTOR asks to work a specific weekend or holiday and gives OWNER advanced, written notification of critical path work to be performed and a substantial amount of precipitation occurs that prevents the work from being performed, then that day can be claimed as a weather impact day. If the effects of inclement weather from a non-scheduled work day carry forward to a scheduled work day and impacts the Critical Path as noted above, then the scheduled work day will be considered impacted by weather. Any unused rain day allowance at the end of the project will be shown as available float to the Substantial Completion Milestone. Excusable, non-compensable time extensions will be granted for inclement weather to Substantial Completion milestone only after the weather impact area affecting the critical path work has exhausted the allotted cumulative Rain Day Impact Allowance. On projects that have multiple phases with defined start & finish dates, the cumulative rain impact allowance may be split up (pro-rated) into their designated phases upon OWNER Approval.

K. Cost loaded Activities:

1. Each activity included in the Proposed Baseline Schedule shall be assigned the cost CONTRACTOR estimates it will incur performing that activity. Each activity's assigned cost will be inclusive of overhead and profit so CONTRACTOR'S total overhead and profit is distributed over all activities on a pro rata basis. The sum of the costs assigned to activities shall equal the total contract value. No activity costs shall be assigned to manufacturing or delivery activities unless approved by OWNER. If OWNER finds that the costs are front loaded and the distribution of costs is unreasonable, CONTRACTOR shall re-distribute the costs and resubmit the revised Schedule of Values within five days for OWNER backcheck.
2. CONTRACTOR shall cost load activities in the Proposed Baseline Schedule and allocate costs to related resource/cost accounts associated with each activity. The cost accounts shall match the CSI sections listed in the Table of Contents of the Specifications. The format shall be coordinated with Specification Section 01 2973 (Schedule of Values) and Specification Section 01 2976 (Progress Payment Procedures). All cost-loaded activities

shall roll-up to their designated CSI sections and shall be the basis for the data reported in the Schedule of Values (Section 01 2973), and Progress Payment Procedures (Section 01 2976).

3. Submit computer generated reports using the scheduling software which will be the basis for the approved Schedule of Values. The reports shall contain the following data for each activity: Cost/Resource Account Number (by CSI section), Cost/Resource Account Description, Cost/Resource Account Budget, Cost to Date, Cost this Period, and Cost at Completion. Total Costs shall be organized and totaled by CSI section.
 4. Submit a Cost Flow Histogram in accordance with Article 3.04.L.3.
- L. CONTRACTOR shall submit computer generated reports and plots with the Proposed Baseline Schedule submittal package. Format shall display the following columns: Activity ID, Activity Description, Original Duration, Remaining Duration, Percent Complete, Early Start, Early Finish, Late Start, Late Finish, and Total Float. Unless otherwise noted, bar charts and reports shall be on 8 ½ by 11 paper and bound.
1. Color Bar charts shall be generated separately for:
 - a. Milestones only.
 - b. All Activities sorted by Early Start date and organized by Project, Area, Stage, and Substage. (The network shall be organized to show continuous flow of all activities from left to right). CONTRACTOR is reminded that during the monthly schedule update process, even the activities that have already been completed need to be shown in this “all activities” bar chart report.
 - c. Activities sorted by Responsibility.
 - d. Summary level of all activities sorted by craft/trade and area.
 - e. Critical Path (Longest Path). The network shall be organized to show continuous flow of all critical activities on the longest path from left to right (sorted by early start).
 2. Reports:
 - a. Total Float sorted low to high.
 - b. Predecessors and Successors sorted by Activity ID.
 3. Cost Flow Histogram
 - a. Using the costs assigned to each activity, develop a Histogram that projects the estimated invoice amounts by month for the Project duration. The histogram shall be produced from the scheduling software on 11” by 17” paper (landscape mode). It shall contain both a monthly bar histogram and a cumulative cost curve on the same graph. The Total Costs shall be based on the Early Dates option.

4. Man Power Histogram
 - a. Submit a planned man-power graphic bar histogram produced from the scheduling software on 11" by 17" paper (landscape mode) that displays total man-hours based on Early Dates. Show both a weekly bar histogram and a cumulative curve on same graph. In addition, provide a summary excel table of average crew sizes and peak crew sizes broken down by trade/subcontractor. CONTRACTOR will need to perform their due-diligence to make sure that the activity man-power loading is realistic and adequate based on material /labor cost estimates.
 5. Provide a written narrative as required by Article 3.04.B.8.
 6. Electronic data: Provide an electronic file in its original format of the Schedule. The electronic P6 files shall be saved in "XER" type format (version 6.1).
 7. Plots: Produce a color bar chart on E-size paper (30 by 42-inch) organized (at a minimum) by project, area, stage, and substage.
- M. OWNER will notify CONTRACTOR of any adjustments that are required for the Proposed Baseline Schedule to be accepted. CONTRACTOR shall perform any required adjustments to the Proposed Baseline Schedule and resubmit it for acceptance certifying in writing that all information contained therein complies with the Contract Documents. OWNER will review the Proposed Baseline Schedule for accuracy, reasonableness, and conformance with the Contract Documents and shall provide comments within ten days of receipt. Within five days after receiving OWNER comments, CONTRACTOR shall both incorporate changes to address OWNER concerns and resubmit the Proposed Baseline Schedule for OWNER backcheck. This process will continue until the Proposed Baseline Schedule is accepted as the Baseline Schedule. Once accepted by OWNER, the Baseline Schedule will be the basis upon which CONTRACTOR shall prepare updates that record and report actual performance and progress. The accepted Baseline Schedule and subsequent Monthly Updates (reference Articles 3.04 and 3.05 respectively) shall be the basis for consideration and analysis of requests for time extensions and CONTRACTOR progress payments.
- N. OWNER acceptance of the Baseline Schedule or CONTRACTOR'S failure to identify or include an element of the Contract, shall not release CONTRACTOR'S obligation to complete all required Work in accordance with the Contract Documents.

3.05 REQUIREMENTS FOR MONTHLY/WEEKLY SCHEDULE UPDATING

- A. Once the Baseline Schedule is accepted by OWNER, CONTRACTOR shall copy the Approved Baseline file to a new name, status the activities with actual as-built data through the end of the month & submit Monthly Schedule Updates beginning with month No. 1. The current month's schedule update cannot be accepted until the previous Monthly Schedule Update has been accepted by OWNER. Each

Monthly Schedule Update shall be submitted con-currently with the Monthly Pay Application no later than the fifth day of the succeeding month in accordance with Article 14 of the General Conditions.

B. Monthly Schedule Update Format.

1. Initially, the contractor shall status a current Monthly Schedule Update with actual Work progress only. No logic ties shall be modified. Status all Actual Start and Finish dates, adjust Remaining Durations where needed, and update Percent Completion of cost and resource loaded activities. No activity Original Durations or Logic shall be changed unless authorized by OWNER. No new activities shall be added (except for the addition of new activities for every re-submittal and re-review required) or unless authorized by the OWNER.
2. Once the schedule is statused in accordance with Article 3.05-B1, CONTRACTOR shall print (and submit with Monthly Schedule Update) a report of “out-of-sequence” logic that results from the updating process. CONTRACTOR shall then correct all “out-of-sequence” logic to reflect CONTRACTOR’S actual Work sequence. Prior to submission of the Monthly Schedule Update, CONTRACTOR shall review and validate that all remaining activities along with their schedule relationships are still accurate based on the actual work flow in the field. If CONTRACTOR chooses to modify logic or add activities (other than out-of-sequence corrections), it shall be done in accordance with Article 3.07 for OWNER Review & Approval. CONTRACTOR shall also submit a comparison report between the previous monthly schedule update and the current monthly update that will document the over-all changes (i.e. comparison software such as “Digger”, or “Schedule Analyzer”, etc.).
3. During construction, CONTRACTOR may desire to break down specific activities into greater detail. If greater detail is necessary, then CONTRACTOR shall identify expanded activities such that the Baseline Schedule activities that the expanded activities originated from are readily apparent. CONTRACTOR shall not allow the aggregate duration of the expanded activities to exceed the duration assigned to the Baseline Schedule activity unless permitted by OWNER in writing.
4. Autocost rules and calculation rules shall link Remaining Duration and Percent Complete.
5. The Data Date for the Monthly Schedule Updates shall be the last day of the month. At a minimum, three days prior to the submission of the Monthly Schedule Update, CONTRACTOR shall meet in person with OWNER to present the proposed Percentages of Completion and Actual Start and Actual Finish dates. Once percentages of completion and actual dates have been agreed to, they shall be the basis of the Monthly Schedule Update.

6. CONTRACTOR shall submit a Cost Histogram that overlays the planned cost curve from the Baseline Schedule, against the monthly cumulative “cost to date” curve, and against the remaining activities planned curve from the current Monthly Schedule Update.
 7. Written Narrative Report: CONTRACTOR shall include a written report to explain the Monthly Schedule Update. The narrative shall, at a minimum include the following headings with appropriate discussions of each topic:
 - a. Introduction.
 - b. A Summary of Work which was on-going (This Pay Period).
 - c. Problem Areas and Proposed Solutions.
 - d. Critical Path.
 - e. Current and Anticipated Delays.
 - f. Coordination of Work with Others.
 - g. Milestone Status.
 - h. Revisions: the standard schedule comparison report that compares the current update to the previous update shall be submitted to help document any variances/changes. However, this comparison report will not be accepted by OWNER in lieu of the above written narrative requirements outline above.
 8. In updating the Schedule, CONTRACTOR shall not modify Activity ID numbers, schedule calculation rules/criteria, or the Activity Coding Structure required.
 9. Submit bar charts, reports, a cost flow histogram, man-power histogram, written narrative, electronic data, and plots in accordance with Article 3.04-L.
 10. Submit a cost-loaded report (progressed monthly) produced from the scheduling software that displays all of the activities organized by the CSI section cost/resource accounts. This report shall be in compliance with Article 3.04-K, Section 01 2973 (Schedule of Values), and Section 01 2976 (Progress Payment Procedures).
- C. Four-Week Rolling Schedule: At each Weekly Progress Meeting, CONTRACTOR shall present a Four-Week Schedule in Bar Chart format. It shall show one (1) week of actual and three (3) weeks of forecasted progress. The Four-Week Rolling Schedule shall be used as a basis for discussing progress and work planned during the three (3) weeks.
1. The Four-Week Rolling Schedule shall be based on the most recent OWNER Accepted Monthly Schedule Update. It shall include weekly updates to all construction, submittal, fabrication and procurement, and separate work contract activities. CONTRACTOR shall ensure that it accurately reflects the current progress of the Work.

2. CONTRACTOR shall discuss at the weekly Progress meeting the actual dates and any variances to critical or near critical activities.
3. Upon request by OWNER, CONTRACTOR shall provide the Four-Week Rolling Schedule in electronic format.
4. If the Four-Week Rolling Schedule indicates activities are behind schedule, CONTRACTOR shall provide a Recovery Schedule in accordance with Article 3.06.
5. If the CONTRACTOR chooses to provide a Four-Week Rolling Schedule in a greater level of detail (by trade/subcontractor) outside of the monthly contractual P3/P6 schedule database, then upon CONTRACTOR REQUEST and OWNER written approval, the CONTRACTOR may proceed as long as the detailed activities roll-up to the contractual P3/P6 monthly schedule updates. These detailed activities will need to be linked to the overall Substantial Completion date as to properly forecast whether the project is ahead or behind schedule during the weekly Progress Meetings. The Four-Week Rolling Schedule must accurately reflect the work that is going on during the current week and must accurately reflect what will happen in the next three weeks.

3.06 RECOVERY SCHEDULES

- A. If a Monthly Schedule Update indicates negative float greater than ten (10) days on a critical path as result of events not predicated by the General Conditions CONTRACTOR shall prepare a Proposed Recovery Schedule demonstrating CONTRACTOR'S plan to regain the time lost. The Recovery Schedule shall be submitted either in advance of or concurrent with the Monthly Schedule Update and CONTRACTOR progress request. Both the Monthly Schedule Update and the Proposed Recovery Schedule shall be based on the same percentages of completion and actual dates accepted by OWNER under Article 3.05 B.
- B. The Proposed Recovery Schedule shall be based on a copy of the Monthly Schedule Update for the calendar month during which the negative float first appears.
- C. The Proposed Recovery Schedule shall include a written narrative that identifies the causes of the negative float on the critical path and provides CONTRACTOR'S proposed corrective action to ensure timely completion of all Milestones and the Substantial Completion Date. CONTRACTOR'S corrective actions shall include but are not limited to increasing concurrent operations, increasing labor, adding multiple shifts in a 24-hour period, and adding overtime.
- D. During any period of time when CONTRACTOR is found to be behind schedule by OWNER, the Monthly Schedule Update described above shall become a weekly requirement (at no additional cost to OWNER) to provide a greater degree of focus on the timely completion of the Work. These Updates shall be submitted to OWNER every Monday morning. When CONTRACTOR is deemed by OWNER to be back on schedule, CONTRACTOR may revert to submitting the schedule monthly.

- E. CONTRACTOR'S progress payment may not be processed until OWNER accepts the Proposed Recovery Schedule. Following such an acceptance, the Proposed Recovery Schedule will be known as the Recovery Schedule and future Work will be performed by CONTRACTOR in accordance with it.

3.07 FRAGNETS AND TIME EXTENSION REQUESTS

- A. Float is not for exclusive use or benefit of either OWNER or CONTRACTOR but is an expiring resource available to both parties on a non-discriminatory basis. If required to meet specified Milestones, either party may utilize float. Adjustments to Milestones or Contract Time will only be authorized by Change Order and only to the extent the claimed adjustments exceed total float along the most critical path of the current Monthly Schedule Update in effect at the time of the claimed adjustments. The claimed adjustments to the Milestones and/or Contract Time must also cause the Substantial Completion Date to exceed that currently indicated in the Monthly Schedule Update. No time extensions will be granted nor delay damages paid under contract until all available float is used and the CONTRACTOR obtains a Time Extension Request approval from the OWNER in accordance with Article 3.07 in its entirety. CONTRACTOR claimed adjustments to an existing negative float path will not receive consideration until the activity with the highest negative float is driven even further negative.
 - 1. Claimed adjustments to the Milestones or Contract Time will be administered in conjunction with those set forth in the General Conditions.
- B. Pursuant to the float sharing requirements of this Section, the use of float suppression techniques such as preferential sequencing or logic, special lead or lag logic restraints, and extended activity times or durations are prohibited. The use of float time disclosed or implied by the use of alternate float suppression techniques shall be proportionally shared to benefit OWNER and CONTRACTOR. The use of any technique solely for the purpose of suppressing float will result in OWNER rejection of the submitted Monthly Schedule Update.
- C. In the event CONTRACTOR believes the Project has suffered an adverse impact arising from events predicated by the General Conditions, CONTRACTOR may prepare a Time Extension Request by submitting a Schedule Fragnet and a written narrative outlining the detail of the impact. A Schedule Fragnet must demonstrate a critical path delay. Such a delay must adversely impact the Substantial Completion Date for CONTRACTOR to receive a time extension. To demonstrate such an impact successfully, CONTRACTOR shall prepare a Schedule Fragnet based on a copy of OWNER accepted Monthly Schedule Update for the calendar month during which the adverse impact occurred. This "copy" of the OWNER accepted Monthly Schedule Update shall however first be updated (by OWNER and CONTRACTOR jointly) with both Percentages of Completion and Actual Dates up to the day the delay commenced. This process will provide the "pre-delay" project status. Once OWNER and CONTRACTOR have agreed to the "pre-delay" project status, CONTRACTOR should make a copy of this "pre-delay" schedule and this copy is to be the starting point for CONTRACTOR'S Schedule

Fragnet development. OWNER will evaluate the activities, logic, durations, etcetera, in the Schedule Fragnet and will evaluate if the adverse impact arose from events described by the General Conditions. The Fragnet shall also include CONTRACTOR-caused delays that affect the critical or near critical path in the network and should be accounted for in the Time Impact Analysis if overlapped at any point in time with OWNER-caused delay. If rain impact days were granted between the Start and Finish of OWNER-caused delay period, they should be accounted for in the Time Impact Analysis as well. Provided OWNER determines such an impact occurred, CONTRACTOR may be due a time extension equal to the number of proportioned days of variance/delay that resulted to the Substantial Completion Date.

- D. Activities added into a Schedule Fragnet to demonstrate the impact of adverse event shall be assigned a unique activity code. The Schedule shall be organized by this unique activity code.
- E. The Schedule Fragnet shall incorporate logic that accurately ties reflective of the adverse event to pre-event predecessor activities and post event successor activities.
- F. The format and components of a Schedule Fragnet submittal shall be in accordance with this Section and the General Conditions. It is crucial for the Fragnet to be submitted within the same month of discovery so it can be resolved during the monthly schedule update review.
- G. If OWNER accepts CONTRACTOR'S Schedule Fragnet and an extension is granted, a Change Order will be prepared. OWNER will advise what change order number the time extension will become. When CONTRACTOR receives this Change Order number, all the activities added to the Schedule Fragnet shall be given Activity Identification Numbers that corresponds with the Change Order number. CONTRACTOR shall cost load and resource-load the activities if required by OWNER. If resource loading is required, the resource loading shall include a breakdown of labor, material, and equipment quantities.
- H. If OWNER rejects CONTRACTOR'S Schedule Fragnet in part based on improper forecast logic or activity tasks then it shall be revised accordingly to conform to OWNER'S review comments and resubmitted. If the forecast logic and activity tasks cannot be agreed to then the pre-delay schedule outlined in Article 3.07-C shall be compared to the actual as-built data in the succeeding month of the encountering issue, event, condition, circumstance, and/or cause. The variance to the project between the pre-delay and post delay schedules shall be discussed in CONTRACTOR'S written narrative and proportioned between the different parties involved in the delay.
- I. If OWNER rejects CONTRACTOR'S Schedule Fragnet in whole then CONTRACTOR may follow the procedures set forth in the General Conditions.

3.08 PAYMENT FOR SCHEDULING

- A. The Work of this Section will be included as part of the bid price.

- B. Preparation, revising, maintenance, and compliance with this Section and Section 01 2973 is an integral part of the Contract Documents and is specified to have a minimum value equal to 2 percent of the original Contract Amount or \$150,000, whichever is less. This amount shall be proportionally cost loaded into two activities in both the Proposed Baseline Schedule and the Schedule of Values described in Section 01 2973. One activity for the “Baseline Schedule” and the other activity for the “Monthly Schedule Update Process” as follows:
1. CONTRACTOR may allocate twenty percent (20 percent) of the total cost and place in the “Baseline Schedule” activity. It can then be billed against when the OWNER accepts the Proposed Baseline Schedule as the Baseline Schedule.
 2. The remaining eighty percent (80 percent) may be cost loaded into the “Monthly Schedule Update Process” activity. This amount may be billed in equal monthly increments. The amount of those increments is determined by dividing the remaining cost by the total number of months in the Contract Time. Payment of these incremental amounts is contingent upon OWNER acceptance of CONTRACTOR Monthly Schedule Updates, Recovery Schedules, Four-Week Rolling Schedules, Fragnets, Time Impact Analysis, and the updated Log of Required Submittals.
 3. The CONTRACTOR shall anticipate in their base contract scope that numerous Fragnets and written time impact analyses will be required during the duration of the project with the Monthly Schedule Updates. Requests for extra scheduling services will not be considered until the CONTRACTOR demonstrates that all of the costs stipulated in Article 3.08-B has been expended.

3.09 FAILURE TO COMPLY WITH REQUIREMENTS

- A. At any time during the project if CONTRACTOR fails to comply with the specified requirements, OWNER reserves the right to engage independent estimating and scheduling consultants to fulfill these requirements. Upon notice to CONTRACTOR, OWNER shall assess against CONTRACTOR, incurred costs for these additional services.
- B. In such an event, OWNER will require, and CONTRACTOR shall participate and provide requested information to ensure the resulting Milestones Schedule accurately reflects CONTRACTOR’s plan to execute the Work in compliance with the Contract Documents. If it becomes necessary for OWNER to recommend logic or duration revisions as a result of CONTRACTOR failure to furnish acceptable data, and if CONTRACTOR has objections to the recommendations, CONTRACTOR shall provide notice to OWNER within three days and CONTRACTOR shall provide an acceptable alternate plan. If CONTRACTOR fails to so note any objections and provide an acceptable alternate plan, or if CONTRACTOR implements the recommendations of OWNER without so noting any objections, CONTRACTOR will be deemed to have waived all objections and

concurred with the recommended logic/duration revisions provided by ARCHITECT and/or OWNER.

- C. Submittal of any Monthly Schedule Updates are subject to review and acceptance by OWNER. OWNER retains the right, including, but not limited to the General Conditions, to withhold progress payments in whole or part until CONTRACTOR submits a Monthly Schedule Update acceptable to OWNER. If a Monthly Schedule Update is “Rejected” due to the OWNER not receiving a satisfactory schedule that accurately reflects the on-going work activities, the OWNER will mandate a separate meeting with the CONTRACTOR and approved Scheduler to remedy the non-conformance. If after the 2nd consecutive month the OWNER still has to “Reject” the monthly Schedule update due to non-conformance, then the CONTRACTOR’S Scheduler will need to be replaced at no additional cost to the OWNER. CONTRACTOR shall within one week of disapproval, propose another Scheduler who meets the experience requirements stated in this Section.

3.10 CONTRACTOR RESPONSIBILITY

- A. Nothing in this Section shall be construed to be a usurpation of CONTRACTOR authority, responsibility, and obligation to plan and schedule Work as CONTRACTOR deems necessary, subject to all other requirements of the Contract Documents.
- B. CONTRACTOR shall involve the subcontractors, manufacturers, and suppliers in the development and periodic updating of the schedule.

3.11 RECORD DOCUMENTS / FINAL AS-BUILT SCHEDULE

- A. Prior to Contract Completion of the Work, CONTRACTOR shall submit a final as-built schedule, and a time-scaled network diagram reflecting the actual dates of all activities. This shall be submitted prior to the final application of payment and prior to the request to release retention.

END OF SECTION

SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for submittals required for the Work, including but not limited to; Shop Drawings, Product Data, Samples, material lists, and quality control items.
- B. Throughout the Contract Documents, the minimum acceptable quality of materials, fabrication, and execution have been defined by the name and catalog number of a manufacturer and by reference of recognized industry standards.
- C. To ensure that specified products are furnished and installed in accordance with the design intent, procedures have been established for submittal of design data and for its review by ARCHITECT, OWNER and others.

1.02 RELATED REQUIREMENTS

- A. Section 01 1216: Phasing of the Work.
- B. Section 01 2513: Product Substitution Procedures.
- C. Section 01 2973: Schedule of Values.
- D. Section 01 2976: Progress Payment Procedures.
- E. Section 01 3113: Project Coordination.
- F. Section 01 3213: Construction Schedule.
- H. Section 01 4523: Testing and Inspection.
- I. Section 01 4525: Testing, Adjusting, and Balancing for HVAC.
- J. Section 01 5000: Construction Facilities and Temporary Controls.
- K. Section 01 7123: Field Engineering.
- L. Section 01 7329: Cutting and Patching.

- M. Section 01 7416: Storm Water Pollution Prevention.
- N. Section 01 7700: Contract Closeout.
- O. Section 01 7836: Warranties.

PART 2 – PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 PROCEDURES

- A. CONTRACTOR is required to review and approve every submittal and shop drawing prior to transmittal and delivery to ARCHITECT. Should CONTRACTOR determine a submittal contains errors, or does not meet the requirements of the contract, CONTRACTOR shall immediately return the submittals and shop drawings to the producer and expedite the corrections prior to transmitting the submittal to ARCHITECT. Submittals shall not be used by CONTRACTOR to request clarifications or submit questions. CONTRACTOR will affix stamp to each submittal certifying CONTRACTOR has performed, at minimum, the following:
 - 1. Verified the submittal is complete in all respects and follows the requirements of the Contract Documents without variance.
 - 2. Confirmed that no substitutions have been included. If substitutions are included, CONTRACTOR shall eliminate them from the submittal and process them in accordance with General Conditions.
 - 3. Identified any variances from the requirements of the Contract Documents and confirmed that the identified variance meets, but does not exceed the allowable limitations or tolerances as defined in these specifications.
 - 4. Verified that all submitted materials, dimensions and tolerances are compatible with existing or planned conditions of the Work in order to erect, fabricate, or install the submitted assembly in conformance with the requirements of the Contract Documents.
 - 5. Coordinated and verified that the dimensions match CONTRACTOR measured field or installation conditions.
 - 6. Coordinated and verified that the products of separate manufacturers required within any field produced assembly are compatible in all respects for such assembly.

7. Packaged together all related submittals or shop drawings where such is necessary for a comprehensive ARCHITECT review.
- B. CONTRACTOR shall package each submittal appropriately for transmittal and handling. Transmittal format shall be as required by OWNER. CONTRACTOR shall transmit and deliver six sets of each submittal or re-submittal to ARCHITECT, two of which shall be returned to CONTRACTOR. Some specifications may require additional copies be provided. CONTRACTOR shall provide the OWNER additional copies as specified. ARCHITECT will not accept submittals received from sources other than from CONTRACTOR.
 - C. After ARCHITECT'S review, ARCHITECT will transmit submittals to CONTRACTOR, INSPECTOR and others as required. Work shall not commence until approved submittals are transmitted to CONTRACTOR.
 - D. CONTRACTOR shall clearly identify any deviations from the Contract Documents on each submittal. Any deviation not so noted even though stamped reviewed is not acceptable.
 - E. CONTRACTOR shall coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities requiring sequential activity.
 - F. Timing of Submittals:
 1. In accordance with General Conditions, CONTRACTOR shall submit to ARCHITECT those Shop Drawings, Product Data, diagrams, materials lists, Samples and other submittals required by the Contract Documents.
 2. The scheduling of submittals shall be sequenced to support the progress of the Work, and shall be:
 - a. Submitted sufficiently in advance of construction, fabrication or installation in order to allow time for transmittal, review, modification, correction, (and resubmission and re-review when required.)
 - b. Phased with adequate time between submittals in order to allow for proper review by the ARCHITECT without negative impact to the Milestones Schedule.
 3. CONTRACTOR shall coordinate submittal of related items and ARCHITECT reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received by ARCHITECT.

4. CONTRACTOR shall revise, update and submit submittal schedule to ARCHITECT on the first of each month.
 5. CONTRACTOR shall allow in the Construction Schedule, at least sixteen days for ARCHITECT review following ARCHITECT receipt of submittal.
 6. No adjustments to the Contract Time or Milestones will be authorized because of a failure to transmit submittals to ARCHITECT sufficiently in advance of the Work to permit review and processing or where CONTRACTOR fails to provide ARCHITECT submittals on related items.
 7. In case of product substitution, Shop Drawing preparation shall not commence until such time as OWNER accepts or rejects the proposed substitution in accordance with the procedures described in the General Conditions.
- G. If required, resubmit submittals in a timely manner. Resubmit as specified for initial submittal but identify as such. Review times for re-submitted items shall be as per the time frames for initial submittal review.
- H. Shop Drawing preparation shall not commence until such time as CONTRACTOR receives Product Data acceptance.
- I. ARCHITECT will stamp each submittal with a uniform, action stamp. ARCHITECT will mark the stamp appropriately to indicate the action taken, as follows:
1. Final Unrestricted Release: When ARCHITECT marks a submittal "Reviewed" the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.
 2. Final-But-Restricted Release: When ARCHITECT, or authorized agent, marks a submittal "Reviewed as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.
 3. Returned for Re-submittal: When ARCHITECT, or authorized agent, marks a submittal "Rejected, Revise and Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat as necessary to obtain different action mark. In case of multiple submittals covering same items of Work, CONTRACTOR is responsible for any time delays, schedule disruptions, out of sequence Work, or additional costs due to multiple submissions of the

same submittal item. Do not use, or allow others to use, submittals marked “Rejected, Revise and Resubmit” at the Project site or elsewhere where Work is in progress.

4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, ARCHITECT, or authorized agent, will return the submittal marked “Action Not Required “.

3.02 SHOP DRAWINGS

- A. Shop Drawings are original drawings prepared by CONTRACTOR, Sub-contractor, supplier, or distributor illustrating some portion of Work by showing fabrication, layout, setting, or erection and shall not be based on reproduced Contract Documents or copied standard information.
- B. Produce Shop Drawings to an accurate scale that is large enough to indicate all pertinent features and methods. Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
- C. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:
 1. Dimensions.
 2. Identification of products and materials included by sheet and detail number.
 3. Compliance with specified standards.
 4. Notation of coordination requirements.
 5. Notation of dimensions established by field measurement.
- D. Provide a space of approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record CONTRACTOR and ARCHITECT review, and the action taken. Include the following information on the label for processing and recording action taken:
 1. Project name.
 2. Date.
 3. Name and address of ARCHITECT.

4. Name and address of CONTRACTOR.
 5. Name and address of Subcontractor.
 6. Name and address of supplier.
 7. Name and address of manufacturer.
 8. Name and title of appropriate Specification section.
 9. Drawing number and detail references, as appropriate.
- E. Unless otherwise agreed to or indicated in individual Specification sections, submit a sufficient number of sets to allow for adequate distribution to CONTRACTOR, Sub-Contractor, supplier, manufacturer and fabricators plus one set to be retained by ARCHITECT.

3.03 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of Work or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, wiring diagrams, schedules, illustrations, or performance curves.
1. Mark each copy to show or delineate pertinent materials, products, models, applicable choices, or options. Where Product Data includes information on several products that are not required, clearly mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
 - g. Notation of dimensions and required clearances.

- h. Indicate performance characteristics and capacities.
- i. Indicate wiring diagrams and controls.

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed by CONTRACTOR.

C. Required Copies and Distribution: Same as denoted in Article 3.02.E.

3.04 SAMPLES

A. Procedure:

- 1. Submit Samples of sufficient size, quantity, cured and finished and physically identical to the proposed product or material. Samples include partial or full sections or range of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches denoting color, texture, and/or pattern.
 - a. Mount or display Samples in the manner to facilitate review of qualities indicated. Include the following:
 - 1) Specification section number and reference.
 - 2) Generic description of the Sample.
 - 3) Sampling source.
 - 4) Product name or name of manufacturer.
 - 5) Compliance with recognized standards.
 - 6) Availability and delivery time.
- 2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variations in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three (3) multiple units that show the approximate limits of the variations.
 - b. Refer to other Specification sections for requirements for Samples that illustrate materials, fabrication techniques, assembly details, connections, operation, and similar construction characteristics.

- c. Refer to other sections for Samples to be returned to CONTRACTOR for incorporation into the Work. Such Samples must be undamaged at time of installation. On the transmittal indicate special requests regarding disposition of Sample submittals.
 - d. Samples not incorporated into the Work, or otherwise not designated as Owner property, remain the property of CONTRACTOR and shall be removed from the Project site prior to Substantial Completion.
- 3. Color and Pattern: Whenever a choice of color or pattern is available in a specified product, submit accurate color chips and pattern charts to ARCHITECT for review and selection.
 - 4. Number Required: Submit four of each. Two will be returned to CONTRACTOR.
- B. When specified, erect field Samples and mock-ups at the Project site to illustrate products, materials, fabrications, or execution and to establish standards by which completed Work shall be judged.
 - C. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of the Work. Sample sets may be used to obtain final acceptance of the Work associated with each set.

3.05 QUALITY CONTROL SUBMITTALS

- A. Submit quality control submittals, including design data, certifications, manufacturer's field reports, and other quality control submittals as required under other sections of the Contract Documents.
- B. When other sections of the Contract Documents require manufacturer's certification of a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.
- C. Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the represented company.
- D. Requirements for submittal of inspection and test reports are specified in other sections of the Contract Documents.

END OF SECTION

SECTION 01 3546

INDOOR AIR QUALITY PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

A. Section includes:

1. CONTRACTOR's requirements and actions to ensure that the building and the mechanical system are free of Volatile Organic Compounds (VOCs), moisture, dust, mold, and microbes prior to achieving Substantial Completion.
2. CONTRACTOR requirements for temporary construction ventilation, dust protection, preconditioning of materials, protection of materials, sequencing, and duct protection.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 01 1216 - Phasing of the Work.
3. Section 01 4525 - Testing, Adjusting, and Balancing for HVAC.
4. Section 01 5000 - Construction Facilities and Temporary Controls.
5. Section 01 6000 - Product Requirements.
6. Section 23 3000 - Air Distribution.
7. Section 23 8000 - Heating, Ventilating, and Air Conditioning Equipment.

C. Referenced Standards:

1. ASHRAE 62.1, Ventilation for Acceptable Indoor Air Quality.
2. ASHRAE 52.2, Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.

D. VOC-Emitting Materials. Related Sections:

1. Section 06 1000 - Rough Carpentry.

2. Section 06 2000 - Finish Carpentry.
 3. Section 06 4000 - Architectural Woodwork.
 4. Section 07 9200 - Joint Sealants.
 5. Section 09 0170 - Wood Flooring Restoration.
 6. Section 09 2900 - Gypsum Board.
 7. Section 09 6513 - Rubber Base.
 8. Section 09 9000 - Painting and Coating.
- E. VOC-Emitting Furnishings and Equipment. Related Sections:
1. Section 06 4000 - Architectural Woodwork.
 2. Section 10 1100 - Visual Display Units.
 3. Section 10 2113 - Plastic Toilet Compartments.
- F. Porous and Fibrous Materials. Related Sections:
1. Section 07 2100 - Thermal Insulation.

1.02 SUBMITTALS

- A. CONTRACTOR shall develop and submit to the ARCHITECT for review and approval a Construction Indoor Air Quality (IAQ) Plan using the blank form provided after the end of this Section. Plan shall be submitted within 120 days of Notice to Proceed (NTP). Implementation of the approved IAQ Plan shall be included in the project Construction Schedule.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

3.01 QUALITY CONTROL

- A. CONTRACTOR shall conduct inspections to confirm that measures proposed in the Construction IAQ Plan are followed during construction and shall report on the progress of the Plan during the progress meetings described in Section 01 3119: Project Meetings.

3.02 PROJECT CONDITIONS

- A. During construction, prior to Substantial Completion and Building Flush Out, systems designed with particle filters shall not be operated at any time without filters in place. Filters used during construction shall have a minimum rating of MERV 8. Following construction completion, replace filters per Section 23 8000, Heating, Ventilating, and Air Conditioning Equipment.
- B. Following completion of building envelope maintain continuous Temporary Construction Ventilation of interior areas where VOC-Emitting Materials and VOC-Emitting Furnishings and Equipment, identified in Paragraphs 1.01.D and 1.01.E of this Section, areas are installed.
 - 1. Temporary Construction Ventilation may be supplied via the building's HVAC system and shall comply with the following requirements:
 - a. Return air grilles shall be sealed or temporary MERV 8 air filters shall be installed.
 - b. Provide MERV 8 air filters to filter the outside air.
 - c. Provide a minimum of three air changes per hour of outside air while maintaining the building interior temperature between 60 degrees F and 85 degrees F with the relative humidity not to exceed 60 percent.
 - 2. The Temporary Construction Ventilation specified requirements for building interior temperature and/or relative humidity may be exceeded only when the building HVAC unit is operating at 100 percent capacity.
 - 3. Temporary Construction Ventilation may be supplied via temporary ducts and fans, sufficient to provide no less than three air changes per hour, and exhausted directly to the outside/outdoors while maintaining the building interior temperature between 60 degrees F and 85 degrees F with the relative humidity not to exceed 60 percent.
 - 4. Maintain continuous Temporary Construction Ventilation for a minimum period of 72 hours after installation of the VOC-Emitting Materials unless otherwise indicated elsewhere in these Specifications.
- C. Temporary Construction Ventilation shall be provided for post-building-flush-out, post-occupancy touch-up, or punch list activities involving VOC-Emitting materials. Touch-up activities involving VOC-Emitting Materials shall not occur when students or staff are present.
- D. Prior to installation, allow VOC-Emitting Furnishings and Equipment, identified in Paragraph 1.01.E of this Section, to off-gas in dry, well-ventilated space for 14 calendar days.

1. Remove containers and packaging to maximize off-gassing of VOCs.
2. Precondition products in ventilated warehouse or other ventilated building. Preconditioning at the project site is acceptable, provided that Temporary Construction Ventilation and Sequencing measures are taken as described in Paragraph 3.02.B and Article 3.03 of this Section.
3. Products requiring preconditioning include, at a minimum, VOC-Emitting Furnishings and Equipment that contain vinyl or other flexible plastics, resins, adhesives, foam rubber, and fiberboards with urea-formaldehyde binders. Products bearing GREENGUARD Certification, Indoor Advantage Gold Certification, Green Label Plus Certification, or other OWNER-approved certification shall be excluded from this preconditioning requirement.

3.03 SEQUENCING

- A. Where VOC-Emitting Materials identified in Paragraph 1.01.D of this Section are applied on-site, apply the VOC-Emitting Materials prior to installation of any Porous and Fibrous Materials identified in Paragraph 1.01.F of this Section. Maintain the continuous Temporary Construction Ventilation requirements described above for a period of 72 hours before installation of porous and fibrous materials.
 1. Where this sequencing requirement is not possible, protect porous materials with polyethylene vapor retarders. Tape polyethylene edges to insure a complete seal. Maintain continuous ventilation per temporary construction ventilation requirements described above for a period of 72 hours before removing polyethylene.
- B. Completion: Complete interior finish material installation prior To Building Flush-Out as described in Paragraph 3.05.C of this Section.

3.04 PROTECTION

- A. Moisture Protection:
 1. Protect materials specified in Paragraphs 1.01.D, 1.01.E and 1.01.F of this Section from water intrusion or penetration.
 2. Weatherproof enclosures shall be temporarily constructed to store and protect the materials from moisture sources.
 3. Materials shall be covered to protect them from rain and other moisture sources and, if resting on the ground, shall use spacers to allow air to circulate between the ground and the materials.

4. Materials including porous or fibrous materials with visible mold and microbial growth shall not be installed.
 - a. Non-porous materials with minor visible mold and microbial growth shall be decontaminated.
 - b. Structural lumber showing visible signs of mold shall be removed from the project site or be decontaminated, per specification Section 06 1000 - Rough Carpentry, prior to installation.

B. Duct Protection:

1. Seal ducts during transportation and delivery, per Section 23 3000, Air Distribution.
2. Seal ducts during construction to prevent accumulation of dust and debris. If seals must be removed for temporary construction ventilation purposes, they shall be resealed upon conclusion of the required ventilation period. Remove seals prior to HVAC system start-up.
3. During dust producing activities in enclosed buildings, such as drywall installation and finishing, sanding, cutting, or grinding, CONTRACTOR shall turn HVAC ventilation system off and protect HVAC system supply and return openings from dust infiltration. Separate dust-producing activities from the rest of the construction area using plastic sheathing. Provide temporary ventilation.

3.05 CLEANING

- A. Just prior to Substantial Completion, vacuum carpeted and soft surfaces with a Green Label certified vacuum.
- B. Duct Cleanliness:
 1. Before shipment to site ensure ducts are clean and duct openings protected with a self-adhering film, as specified On Section 23 3000, Air Distribution.
 2. Just prior to Substantial Completion and prior to using any ducts to circulate air, ensure that the ducts are free of dust and dirt.
- C. Building Flush-Out:
 1. Building Flush-Out procedures of this Section supersede those described those of Section 01 4525: Testing, Adjusting, and Balancing of HVAC.
 2. At construction completion, prior to occupancy and with all interior finishes installed, replace filtration media with new per HVAC equipment schedule

and perform a building flush-out. Flush-out shall supply a total air volume of 14,000 cubic feet of outdoor air per square foot of floor area while maintaining an internal temperature of at least 60 degrees Fahrenheit and relative humidity no higher than 60%.

3. If OWNER elects to partially use and/or occupy the Work prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cubic feet of outdoor air per square foot of floor area. Once the space is occupied, it shall be ventilated at a minimum rate of 0.30 cubic feet per minute (cfm) per square foot of outside air. During each day of the flush-out period, ventilation shall begin a minimum of 3 hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cubic feet per square foot of outside air has been delivered to the space.
4. During building flush-out, when required to perform touch-up or punch list activities involving VOC-Emitting Materials as described in Article 1.01 of this Section, extend Building Flush-Out by a minimum of four days continuously after the touch-up or punch list activities at the maximum tempered outside air rate for 24 hours per day in the space where the touch-up or punch list activities occurred.
5. If Continuous Construction Ventilation is not possible, non-continuous flush-out shall total an equivalent of air as described in Paragraph 3.05-C.2 above.
6. Return ventilation system to normal operation following flush-out period to minimize energy consumption.

END OF SECTION

CONSTRUCTION INDOOR AIR QUALITY (IAQ) PLAN

Contractor shall complete and submit this Plan to the OAR no later than one hundred twenty (120) days after receipt of Notice to Proceed.

GENERAL CONTRACTOR:

Name: _____ Title: _____
 Telephone: _____ Fax: _____
 Email: _____

I have read and understood and will implement the following Construction IAQ Plan.

Signature: _____ Date: _____

I. CONSTRUCTION VENTILATION (Per paragraphs 3.02.A through C)

List project materials requiring Construction Ventilation per Part 1 of this Section. Attach additional sheet if necessary.

Circle the following Temporary Construction Ventilation approach to be used.

3.02.B	Ventilation will be supplied via building’s HVAC system. <ul style="list-style-type: none"> Return air grilles are sealed. Exhaust is provided via open windows or doors. OR: <ul style="list-style-type: none"> Return air grilles are used for exhaust. HVAC will provide a minimum 35 percent outside air. Air filters with a minimum MERV rating of 8 will be provided at return air grilles. Building HVAC will be turned off during dust generating activities.
3.02.B.3	Ventilation will be accomplished via open windows, temporary ducts, and temporary fans ducted directly to the outdoors. <ul style="list-style-type: none"> Supply air diffusers, return air grilles, and/or open ducts will be sealed. Make-up air will be provided through open windows or doors or other transfer air devices. HVAC system will provide make-up air. Return air grilles will be sealed.

Required	<ul style="list-style-type: none"> • Ventilation will provide no less than three air changes per hour. • Ventilation will be continuous for a period no less than 72 hours after completion of installation of VOC-emitting materials. • Filters used during Construction Ventilation will be replaced prior to Substantial Completion

II. PRECONDITIONING (Per paragraph 3.02.D)

List project materials requiring Preconditioning per Part 1 of this Section. Attach additional sheet if necessary.	
Circle the following Preconditioning approach to be used.	
A	Preconditioning will occur in dry and well-ventilated offsite location. Where is the offsite location?
B	Preconditioning will occur onsite. Check the applicable approach. <input type="checkbox"/> Ventilation will be supplied via building's HVAC system. See paragraph 3.02.B above. <input type="checkbox"/> Ventilation will be accomplished via open windows, temporary ducts, and temporary fans. See paragraph 3.02.B.3 above.
Required	<ul style="list-style-type: none"> • Containers and packaging will be removed prior to Preconditioning. • Preconditioning will occur for fourteen (14) continuous days prior to installation

III. SEQUENCING (Per Article 3.03)

List project porous and fibrous materials requiring Sequencing consideration per Part 1 of this Section. Attach additional sheet if necessary.

Required	<ul style="list-style-type: none"> • Previously installed Porous or Fibrous Materials located in a room where VOC-Emitting Materials are to be installed will be protected with polyethylene vapor retarder. Polyethylene will not be removed until completion of a 72-hour ventilation period. • Installation of interior finish materials will complete fourteen (14) days prior to Substantial Completion
----------	--

IV. PROTECTION (Per Article 3.04)

<p>List project materials requiring Protection per Part 1 of this Section. Attach additional sheet if necessary.</p>	
<p>Required</p>	<ul style="list-style-type: none"> • Weatherproof enclosures shall be temporarily constructed to store and protect the materials from moisture sources. Materials shall be covered from rain and other moisture sources and if resting on the ground, use spacers to allow air to circulate between the ground and the materials. • Materials including porous or Fibrous Materials with visible microbial growth shall not be installed. • Materials that are not defined as Porous or Fibrous with visible microbial growth shall be decontaminated prior to installation. Lumber exhibiting a minor amount of “lumberyard mold” need not be discarded. • Temporary ventilation shall be provided during dust producing activities. See Item I Construction Ventilation above. Supply air diffusers and return air grilles shall be covered. • Ducts shall be sealed during transportation, delivery, and construction.

END OF SECTION

SECTION 01 4213

ABBREVIATIONS, SYMBOLS AND ACRONYMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. List of abbreviations, symbols, and acronyms of societies, institutes, and associations generally appearing in the Contract Documents.

1.02 RELATED REQUIREMENTS

- A. Division 01 - General Requirements

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 ABBREVIATIONS

ac	Alternating current
AFF	Above Finish Floor
amp	ampere
BOOTP	Bootstrap Protocol
BTU	British thermal unit
C	Degrees Centigrade, Celsius
Cat 6	Category 6, unshielded twisted pair cabling
CFC	Chlorofluorocarbon
cfh	Cubic feet per hour
cfm	Cubic feet per minute
cm	Centimeter
Co.	Company
COP	Coefficient of performance
Corp.	Corporation
d	Penny
db.	Decibel
DB	Dry bulb
dc	Direct current

EER	Energy efficiency ratio
F	Degrees Fahrenheit
fpm	Feet per minute
ft	Foot or feet
GA	Gage
gph	Gallons per hour
gpm	Gallons per minute
HP	Horsepower
HVAC	Heating, ventilating and air conditioning
Hz	Hertz
ID	Inside Diameter
Inc.	Incorporated
IR light	Infrared light
Kbps	Kilobits per Second
KHz	Kilohertz
Kip	thousand pounds
Ksf	Thousand pounds per square foot
Ksi	Thousand pounds per square inch
Kv	Kilovolt
KVA	Kilovolt amperes
KW	Kilowatt
KWH	Kilowatt hour
LF	Linear foot
Lb(s)	Pound(s)
LCD	Liquid Crystal Display
Lux	A standard unit of illumination measurement
Max	Maximum
MBH	1000 BTUs per hour
MHz	Mega hertz
mil	Thousandth of an inch
Min	Minimum
mm	Millimeter
mph	Miles per hour
NA	Not Applicable
NIC	Not in Contract

OC	On Center
OD	Outside Dimension
oz.	Ounce
PCF	Pounds per cubic foot
pH	Acidity-alkalinity balance
psf	Pounds per square foot
psi	Pounds per square inch
psig	Pounds per square inch, gage
PVC	Polyvinylchloride
RF	Radio frequency
rpm	Revolutions per minute
SF	Square foot
SS	Stainless Steel
SY	Square yard
V	Volts
W	Watts
WB	Wet bulb

3.02 SYMBOLS

#	Number or pound
'	Foot or feet
"	Inch(es)
%	Percent
°	Degree (Angle or Temperature)

3.03 ACRONYMS

AA	The Aluminum Association, Inc
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ABMA	American Boiler Manufacturers Association
ACI	American Concrete Institute
ADA	Americans with Disabilities Act

ADAAG	Americans with Disabilities Act Accessibility Guidelines
AEC	Automatic Echo Cancellation
AGA	American Gas Association
AGC	Automatic Gain Control
AGCIH	American Conference of Governmental Industrial Hygienists
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association, Inc.
ANI	Automatic Number Identification
ANSI	American National Standards Institute
APA	APA – The Engineered Wood Association
API	Application Programming Interface
ARI	Air-Conditioning and Refrigeration Institute
ARS	Automated Route Selection
ARP	Address Resolution Protocol
ATSC	Advanced Television Systems Committee
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATBCB	Architectural & Transportation Barriers Compliance Board
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBS	Backbone Switch
BGP	Border Gateway Protocol
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Institute of America
BICSI	Building Industry Consulting Services, International
BRI	Basic Rate Interface
CAL/OSHA	California Occupational Safety and Health Administration
CAC	Call Admission Control
CAS	Channel Associated Signaling

CAT 5e	Category 5e
CBC	California Building Code
CCR	California Code of Regulations
CCK	Complementary Code Keying
CDR	Call Detail Record
CEC	California Electrical Code
CESM	Compact Edge Switch-Managed
CFR	Code of Federal Regulations
CIF	Common Intermediate Format
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CLI	Command Line Interface
CLID	Calling Line Identification
CMAS	California Multiple Award Schedule
CMC	California Mechanical Code
CNG	Comfort Noise Generation
CNID	Calling Party Name Identification
CQC	California Quality Control (CMA Standards)
Codec	Coder/Decoder
COS	Class of Service
CPC	California Plumbing Code
CRA	California Redwood Association
CRI	Carpet and Rug Institute
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, U.S. Department of Commerce
CS	Communications Server
CSFM	California State Fire Marshal
CSI	Construction Specifications Institute
CTIOA	Ceramic Tile Institute of America
CTI	Cooling Tower Institute
DHCP	Dynamic Host Configuration Protocol
DHI	Door and Hardware Institute
DNS	Domain Name System
DSA	Division of the State Architect
DTV	Digital Television
DSS	Direct Station Selection
DTMF	Dual Tone Multiple Frequency
DVD	Digital Video Disc

EIA	Electronic Industries Alliance
EIS	Electronic Image Stabilization
ESM	Edge Switch-Managed
E&M	Ear and Mouth
FAT	Field Acceptance Testing
FEP	Front End Processor
FEP	Fluorinated Ethylene Propylene
FPS	Frames per Second
FTP	File Transfer Protocol
FXS	Foreign Exchange Station
EPA	Environmental Protection Agency
ETL	ETL Testing Laboratories
FCC	Federal Communication Commission
FDA	Food and Drug Administration
FECC	Far End Camera Control
FM	Factory Mutual
FPS	Frames per Second
FS	Federal Specifications
FXO	Foreign Exchange Office
FXS	Foreign Exchange Station
GA	Gypsum Association
GANA	Glass Association of North America
GBIC	Gigabit Interface Converter
GUI	Graphical User Interface
GigE	Gigabit Ethernet
HMMA	Hollow Metal Manufacturer's Association
HPVA	Hardwood Plywood & Veneer Association
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol over SSL
HVAC	Heating, Ventilation, and Air Conditioning
IACS	International Annealed Copper Standards
IAMPO	International Association of Plumbing and Mechanical Officials
IC	Intercom
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers Association
ICMP	Internet Control and Message Protocol
ID	Identifier

IDF	Intermediate Distribution Frame
IEEE	Institute of Electrical & Electronic Engineers, Inc.
IEC	International Electro technical Commission
IES	Illuminating Engineering Society
IMI	International Masonry Institute
IOR	Inspector of Record
IP	Internet Protocol
IP Router	Internet Protocol Router
IPVC	Internet Protocol Video Conferencing
IPX	Internetwork Packet Exchange
IRI	Industrial Risk Insurers
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
ISA	Industry Standard Architecture
ISDN	Integrated Services Digital Network
ISM	Intermediate Switch-Managed (Fiber Switch)
ISP	Internet Service Provider
ITD	OWNER, Information Technology Division
ITU	International Telecommunication Union
IVR	Interactive Voice Response
JPEG	Joint Photographic Experts Group (image format)
Kbps	Kilobits per Second
LAN	Local Area Network
LCD	Liquid Crystal Display
LDC	Local Distribution - Cabinet
LDF	Local Distribution Frame
LED	Light Emitting Diode
LIU	Light Interconnection Unit
MAC	Media Access Control
MAN	Metropolitan Area Network
MBR	Maximum Bit Rate
MCU	Multipoint Conference Unit
MDF	Main Distribution Frame
MDF-BBS	Main Distribution Frame Backbone Switch
MIB	Management Information Base
MIC	Message Integrity Check
MLD	Multicast Listener Discovery
MLSFA	Metal Lath/Steel Framing Association

MPOE	Main Point of Entry
MPEG	Moving Picture Experts Group
MP-BGP	Multi-Protocol Border Gateway Protocol
MOS	Mean Opinion Scale
MSS	Manufacturers Standardization Society of the Valve & Fittings Industry.
NAAMM	National Association of Architectural Metal Manufacturers
NAT	Network Address Translation
NAT-PT	NAT Protocol Translation
NAS	Network Attached Storage
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEBB	National Environmental Balancing Bureau
NEBS	Network Equipment Building System
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NEC	National Electrical Code
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NIC	Network Interface Card
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Standards and Technology
NOFMA	National Oak Flooring Manufacturers Association
NPCA	National Paint and Coatings Association
NPDES	National Pollutant Discharge Elimination System
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NTP	Network Time Protocol
NTMA	National Terrazzo & Mosaic Association
NTSC	National Television System Committee
NUSIG	National Uniform Seismic Installation Guidelines
NWMA	National Woodwork Manufacturers Association
OAR	OWNER Authorized Representative
OC-3	Optical Carrier Level-3 (~155 Mbps)
OEHS	Office of Environmental Health and Safety (LAUSD's)
OFNR	Optical Fiber Non-Conductive Riser

OFNP	Optical Fiber Non-Conductive Plenum
OID	Object Identifier
OPX	Off Premise Extension
OSHA	Occupational Safety & Health Administrations
OSI	Open Systems Interconnection
OSPF	Open Shortest Path First
OTDR	Optical Time Domain Reflectometer.
OWAN	OWNER's Wide Area Network
OWNER	Los Angeles Unified School District
PA	Public Address
PABX	Private Auxiliary Branch Exchange
PA/IC	Public Address/Intercommunications
PAL	Phase Alternating Line
PAT	Port Address Translation
PBX	Private Branch Exchange
PCA	Portland Cement Association
PCI	Precast/Prestressed Concrete Institute
PCM	Pulse Code Modulation
PDI	Plumbing and Drainage Institute
PEI	Porcelain Enamel Institute
PHB	Per Hop Behavior (DiffServ)
PIC	PBX Integration Card
PIM	Protocol-Independent Multicast
PING	Packet Internet Groper
PINX	Private Integrated Services Network Exchange
PIP	Picture in Picture
PMO	Project Management Office
PoE	Power-over-Ethernet
POP	Point of Presence
POTS	Plain Old Telephone System
PRI	Primary Rate Interface
PS	Product Standard, U.S. Department of Commerce
PSIP	Program and System Information Protocol
PSTN	Public Switched Telephone Network
PZM	Pressure Zone Microphone

QCIF	Quarter CIF – See CIF
QoS	Quality of Service
QSIG	Q-Signaling
RADIUS	Remote Access Dial-In User Service
RIP	Routing Information Protocol
RIPng	Routing Information Protocol Next Generation
RIS	Redwood Inspection Service
RMON	Remote Network Monitoring
RMON2	Remote Network Monitoring Version 2
SAN	Storage Area Network
SCAQMD	South Coast Air Quality Management District
SCSI	Small Computer System Interface
SDEI	Steel Deck Institute
SDI	Steel Door Institute
SFM	State Fire Marshal
SFP	Small Form-factor Pluggable transceiver
SFP+	Enhanced Small Form-factor Pluggable transceiver
SFPA	Southern Forest Products Association
SIF	Source input format (NTSC)
SIP	Session Initiation Protocol
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SLC	Small Learning Community
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SMDI	Simple Message Desk Interface
SMI	Structure of Management Information
SMTP	Simple Mail Transfer Protocol
SMPTE	Society of Motion Picture and Television Engineers
SNA	Systems Network Architecture
SNMP	Simple Network Management Protocol
SSH	Secure Shell
SSID	Service Set Identifier
SSL	Secure Socket Layer
SSPC	Steel Structures Painting Council
S/P DIF	Sony/Philips Digital InterFace
SWI	Steel Window Institute

TEHO	Tail End Hop Off
TCA	Tile Council of America
TCP	Transmission Control Protocol
TFTP	Trivial File Transfer Protocol
TIA	Telecommunications Industry Association
TKIP	Temporal Key Integrity Protocol
TLS	Transport Layer Security
TOS	Type of Service
UBPPA	Uni-Bell PVC Pipe Association
UCI	Uniform Construction Index
UFAS	Uniform Federal Accessibility Standards
UL	Underwriters' Laboratories, Inc.
UM	Unified Messaging
UPS	Uninterruptible Power Supply
UPnP	Universal Plug and Play
URL	Uniform Resource Locator
USDA	United State Department of Agriculture
UTC	Coordinated Universal Time
UTP	Unshielded Twisted Pair
VAD	Voice Activity Detection
VBR	Variable Bit Rate
VLAN	Virtual Local Area Network
VM	Voice Mail
VMS	Video Management System
VoD	Video on Demand
VoIP	Voice over Internet Protocol
VFD	Vacuum Fluorescent Display
VTC	Video Teleconference
WAN	Wide Area Network
WLAN	Wireless Local Area Network
WDR	Wide dynamic range
WCLIB	West Coast Lumber Inspection Bureau
WDMA	Window and Door Manufacturers Association
WWPA	Western Wood Products Association

END OF SECTION

SECTION 01 4524

ENVIRONMENTAL IMPORT/EXPORT MATERIALS TESTING

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies the requirements for the sampling, testing, transportation and certification of imported fill materials or exported fill materials.
- B. This Section defines:
 - 1. CONTRACTOR requirements for use of existing, imported or generated materials.
 - 2. CONTRACTOR requirements for stockpiling materials for reuse.
 - 3. CONTRACTOR requirements for exporting materials including transportation.
 - 4. Testing requirements for all materials imported, exported, stockpiled or generated.
 - 5. CONTRACTOR testing and reporting requirements.
 - 6. CONTRACTOR submittal requirements.
- C. Related Requirements:
 - 1. Division 1: General Requirements.
 - 2. Section 01 1100: Summary of Work.
 - 3. Section 01 3113: Project Coordination.
 - 4. Section 01 3213: Construction Schedule.
 - 5. Section 01 3300: Submittal Procedures.
 - 6. Section 01 7700: Contract Closeout.
 - 7. Section 31 2200: Grading.
 - 8. Section 31 2313: Excavation and Fill.
 - 9. Section 31 2319: Excavation and Fill (Structures).
 - 10. Section 31 2323: Excavation and Fill (Utilities).
 - 11. Section 32 2326: Base Course.

1.02 OBJECTIVES

- A. Ensure that fill materials imported to the site are safe.
- B. Ensure that materials exported from the site for use at other sites or offsite disposal/recycling are adequately characterized for lawful disposition.
- C. Ensure that representative data be collected so that analytical determinations can be made in regard to the first two objectives.
- D. Require CONTRACTOR to contract with and pay for the services of a licensed environmental professional (licensed State of California Professional Engineer [PE Civil] or Professional Geologist [PG]) familiar with environmental site assessment and waste classification and disposal requirements to perform such services.
- E. Require CONTRACTOR to contract with and pay for an independent, approved California Department of Health Services certified testing laboratory to perform analytical testing of imported, exported and site generated fill materials.
- F. Require CONTRACTOR to pay all fees required by authorities having jurisdiction over area.
- G. Require CONTRACTOR to post bonds required by authorities having jurisdiction over area.

1.03 DEFINITIONS

- A. Definitions not furnished in text of this section:
 - 1. CEQA: California Environmental Quality Act.
 - 2. EIR: Environmental Impact Report.
 - 3. Licensed Environmental Professional: Person licensed in the State of California and with sufficient knowledge and experience to competently perform environmentally-related work, including (but necessarily limited to) environmental site investigations, remedial projects, and other tasks involving the collection of soil, soil vapor, and groundwater samples; the selection of analytical methods for said samples; the interpretation of analytical data; the preparation of work plans, reports, and other relevant documents; and the supervision and/or oversight of remedial contractors. For the purposes of this Section, a licensed environmental professional shall include a Professional Geologist or “P.G.” or a Civil Professional Engineer or “P.E.”
 - 4. ug/kg: micrograms/kilogram.
 - 5. mg/kg: milligrams/kilogram.
 - 6. NA: Not Applicable.
 - 7. RCRA: federal Resource Conservation and Recovery Act.
 - 8. Soil Certification/Sample Data Report: Report documenting location, volume, sampling procedures, analytical methods, chemical test results, and recommendations for either disposing or re-using stockpiled soil excavated

from OWNER sites or proposed for import to same. Preparation of report is to follow the procedures given in Article 1.04 of this Section.

9. Soil Sampling Plan (SSP): As described in Article 1.04 of this Section, a document providing sufficient guidance with which to adequately characterize soil proposed for import to, or export from the site. Guidance in this document is to be in accordance with the procedures described in Article 1.04 of this Section.
10. STLC: Soluble Threshold Limit Concentrations as defined in Tables II and III, Chapter 11, Article 3, § 66261.24-1 of Title 22 of the California Code of Regulations (CCR).
11. TCLP: Toxicity Characteristic Leaching Procedure, test Method 1311, documented in Title 40, Part 261, Subpart C, § 261.24 of the Code of Federal Regulations (CFR).
12. TPH: Total Petroleum Hydrocarbons.
13. TTLC: Total Threshold Limit Concentrations, as defined in Tables II and III, Chapter 11, Article 3, § 66261.24-1 of Title 22 of the CCR.
14. USEPA or EPA: United States Environmental Protection Agency.
15. VOCs: Volatile Organic Compounds.
16. WET: Waste Extraction Test, as defined in Appendix II-1, Chapter 11 of Title 22 of the CCR.

1.04 SUBMITTALS

A. CONTRACTOR shall submit to OWNER:

1. A qualifications statement for CONTRACTOR's independent California certified testing laboratory and required licensed environmental professional (California Professional Civil Engineer (PE) or Professional Geologist (PG) prior to the start of Work. CONTRACTOR's licensed environmental professional must possess recent demonstrated environmental experience in soil sampling and waste classification.
2. A draft import/export Soil Sampling Plan (SSP) prepared by CONTRACTOR's licensed environmental professional for review and concurrence. The objective of the SSP is to obtain representative sample data. The Draft SSP or equivalent document acceptable to OWNER must be submitted at least 72 hours prior to all proposed import/export sampling activities. The consultant's proposal (with or without fees) is acceptable in lieu of a SSP.
 - a. At a minimum, the Draft SSP shall include a site map which shows the location of the proposed import/export soils and the location and number of the proposed stockpile samples. The draft SSP shall also contain information pertaining to the total volume of the stockpile proposed for sampling and the rationale in support of the proposed sampling approach. Existing environmental documentation specific

to the import/export site shall be utilized by the CONTRACTOR's environmental professional to support the proposed sampling approach and analytical method suite. It is the responsibility of the CONTRACTOR to request this information in advance from the OWNER if they do not already have access to a copy at the jobsite.

- b. Lacking this information or rationale, samples shall be analyzed for all analytical methods described in paragraph 3.02 E. Guidance for the minimum number of samples per total volume of soil to be excavated is provided in Table 1. Supplemental samples may be required if pothole sampling is utilized. In addition, the draft SSP shall contain all necessary contact information for the import/export site and a proposed schedule for the sampling activities.
 - c. OWNER will either approve the document or request that revisions be made. This process shall continue until OWNER approves the draft SSP.
3. Draft Soil Certification/Sample Data Report:
- a. A draft Soil Certification/Sample Data Report prepared by CONTRACTOR's licensed environmental professional for review and concurrence. At a minimum the draft Soil Certification/Sample Data Report shall contain:
 - 1) A site map showing the location of the in situ sampling locations or the stockpile(s) and stockpile sample locations.
 - 2) A detailed discussion and evaluation of the laboratory results.
 - 3) A summary of findings and recommendations that provide a determination on the waste classification of the subject materials, based on the representative sample results.
 - 4) Recommendations for additional step-out samples, if any.
 - 5) Chain-of-custody forms and all laboratory data with respective QA/QC sheets.
 - b. CONTRACTOR must allow a minimum of 72 hours to review the draft Soil Certification/Sample Data Report. OWNER will either approve the document or request that revisions be made. This shall continue until OWNER approves the draft Soil Certification/Sampling Data Report.
 - c. Upon revision of the draft Soil Certification/Sample Data Report by the CONTRACTOR'S licensed environmental professional and acceptance by OWNER, the final report, signed and stamped by the licensed professional, shall be submitted to the OWNER. If the soil is to be exported from the site, if it satisfied the requirements of paragraphs 3.02.F and 3.02.G of this Section, then a PG or civil PE must sign and stamp the final report.
 - 1) The OWNER will confirm that the proposed waste classification for the proposed import/export material is

appropriate. For materials designated unacceptable for export except to a licensed facility, or for those materials sent electively by CONTRACTOR to a licensed facility, the OWNER will provide information on the necessary waste manifest documentation.

4. Written documentation, e-mail is acceptable, verifying that all export soil data for any soils exported for use, including the final Certification Report prepared by CONTRACTOR's licensed environmental professional, were provided to the proposed recipient prior to export and delivery.
5. Prior to import/export, written documentation in the form of a letter sent by the transporter to the CONTRACTOR, who must in turn submit it to OWNER, to verify the following:
 - a. The hauling contract for each load imported to, or exported from, the site specifies the use of "clean" trucks and/or trailer beds, in which the material will be carried;
 - b. The actual trucks and/or trailer beds utilized for import/export activities will be clear of visible contamination or deleterious materials;
 - c. The trucks will go directly from the source location to the recipient location with no detours or stops at other locations; and
 - d. Short loads will not be augmented by other materials that were not tested as part of the final SSP.
 - e. All import/export transportation activities shall be conducted in accordance with all applicable local, state and federal rules and regulations.
6. Certification, in the form of haul tickets or completed waste manifests, documenting the volume and recipient of all import/export materials and activities. This documentation shall be coordinated through the OWNER.
 - a. For approved import/export to unregulated facilities (landfill), haul tickets may be utilized, but shall contain the following minimum information:
 - 1) Date(s) of haul activity.
 - 2) Address of source site.
 - 3) Address of recipient.
 - 4) Load volume.
 - 5) Time of departure from source.
 - 6) Time of arrival at recipient site.
 - 7) Signature of recipient or recipient's agent.

- 8) It is the CONTRACTOR's responsibility to confirm that no other trips or short-load augmentation occurred and submit documentation to the OWNER.
- b. For export to regulated facilities (landfills, recyclers, etc.), the appropriate waste manifest as determined by the OWNER in paragraph 1.04.A.3 must be completed and a copy of the executed manifest, signed by the receiving site, must be provided to the OWNER. The waste manifest copy, signed by the receiving facility and based on the manifest address, will be sent directly to the Owner.

1.05 APPROVALS

- A. No import or export of earth or geotechnical grading or filling materials can occur without prior approval.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Imported:
 1. Soils: Soils proposed for import shall be tested pursuant to the requirements of this Section (01 4524), unless a variance has been requested by CONTRACTOR and approved by the OWNER prior to the import of the subject materials.
 2. Gravels: Clean gravel, consisting of native rock from a commercial source, may be granted a variance from the testing requirements of this Section provided a request for variance is submitted by CONTRACTOR for review and approval at least 72 hours prior to import. CONTRACTOR shall provide written documentation, which identifies the source, volume and proposed transport date(s) of the material for review.
 - a. Furthermore, a letter signed and stamped by either a Civil PE or PG and originating from the commercial source must state the following:
 - 1) The quarry does not mine ultramafic (i.e. natural asbestos containing) materials.
 - 2) The gravel is produced from virgin aggregate materials and does not contain any contaminated or reclaimed or recycled materials.
 - b. Additionally, a letter from the material transporter and signed by the same must state the following:
 - 1) Haul truck and/or trailer beds transferring the material are clear of visible contamination and deleterious materials.

- 2) Haul trucks will go directly from the quarry source to the site with no trips or augmentation of short loads with other materials.
 - c. The request for variance requires approval by OWNER prior to CONTRACTOR importing the materials.
 3. Sands: Clean sand from a commercial source may be granted a variance from the testing requirements of this Section provided a request for variance is submitted by CONTRACTOR for review and approval at least 72 hours prior to import. CONTRACTOR shall provide written documentation, which identifies the source, volume and proposed transport date of the material for review.
 - a. Furthermore, a letter signed and stamped by either a Civil PE or PG and originating from the commercial source must state the following:
 - 1) The source does not mine ultramafic (i.e. natural asbestos containing) materials.
 - 2) The sand is produced from virgin materials and does not contain any contaminated or reclaimed or recycled materials.
 - b. Additionally, a letter from the material transporter and signed by the same must state the following:
 - 1) Haul truck and/or trailer beds transferring the material are clear of visible contamination or deleterious materials.
 - 2) Haul trucks will go directly from the commercial source to the site with no trips or augmentation of short loads with other materials.
 - c. The request for variance requires approval by OWNER prior to CONTRACTOR importing the materials.
 4. Miscellaneous Material: No miscellaneous material containing crushed concrete, asphalt, construction debris, recycled, or other potential deleterious materials may be utilized or imported to an OWNER project site for use as fill or grading material.
- B. Exported/Site Generated:
 1. Soils: Soils proposed for export shall be tested pursuant to the requirements of the subject section, unless a variance has been requested by CONTRACTOR and approved by OWNER prior to the import of the subject materials. Once soils or other materials for export have been tested, they cannot be disturbed or reused for any purpose without prior approval by OWNER.
 2. Gravels/Sands: Gravels, sands, or other natural rock materials shall not be exported from project site without prior testing by CONTRACTOR pursuant

to this Section (01 4524) and/or approval by OWNER. An exception to this provision is gravel adhering to concrete or asphalt pavement. In this instance CONTRACTOR may dispose of said materials and construction debris without sampling and analytical testing required under this Section.

3. Miscellaneous Material. No miscellaneous material or other similar materials shall be exported without prior testing by CONTRACTOR pursuant to this Section (01 4524) and/or approval by OWNER. No crushed miscellaneous material containing concrete, asphalt, construction debris, or other potential deleterious materials that is generated onsite may be used as fill or grading material of any sort at project site. Crushed asphalt shall be segregated and stockpiled separately. The onsite use of crushing equipment is not permitted.

PART 3 - EXECUTION

3.01 GRADING/EXCAVATION

- A. If the CONTRACTOR encounters an area with discolored, stained, and/or odorous soils or any other evidence of contamination during excavation/grading work, CONTRACTOR must immediately notify the OWNER, cease work in the aforementioned area, and secure the area with fencing, tape, stakes or other suitable means to prevent entry by personnel or equipment.

3.02 SAMPLING AND TESTING

- A. CONTRACTOR shall contract with, and pay for, the services of a licensed environmental professional, licensed State of California Professional Civil Engineer (PE) or Professional Geologist (PG), to oversee or perform sampling of Materials that are subject to this Section.
- B. CONTRACTOR shall contract with, and pay for, an independent, approved California Department of Health Services certified testing laboratory to perform testing of imported, exported and site generated fill materials.
- C. All fill/grading material whether imported or exported, must be tested at the site of origin. Import/export testing and certification process shall include the steps listed below. OWNER retains the right to refuse any fill material proposed for use at site.
 1. Stockpile all materials for sampling (standard stockpile or backhoe pothole stockpile). Crushed fill materials generated by CONTRACTOR at site must be segregated by material.
 2. Submit draft SSP for review and concurrence by OWNER. SSP must include figures identifying the site location, the in situ sampling boundary or stockpile location, the sampling locations, and a brief site history including the type of remedial activity that occurred at the source site, if any.
 3. Collect and analyze samples (see Table 1 for number of samples per volume) per the SSP. Samples must include both discrete samples and composite samples.

- a. Discrete samples correspond to a single sample depth at a single sampling/boring location. Discrete samples are to be used for producing composite samples, as described in subparagraph b. below, and for analysis, in accordance with paragraph 3.02.E.1, which applies only to VOCs and TPH-g. For analysis of these compounds, the licensed professional shall collect one discrete sample from each sampling location and samples should be collected at different depths between these locations, so that all stockpile depths are equally represented.
 - b. Composite samples correspond to three sample depths from a single sampling location (this includes in situ samples). Each composite sample shall consist of three discrete samples collected near the top, middle, and bottom of the stockpile or in situ boring location at each sampling location. The licensed environmental professional shall then have the analytical laboratory combine the discrete samples into a single composite sample. The laboratory should be directed to retain a sufficient quantity of each discrete sample for further analysis, as necessary. The composite sample shall be analyzed, in accordance with paragraph 3.02.E.2, which describes required testing other than for VOCs and TPH-g. Once materials for export have been stockpiled and tested, they may not be used onsite for any purpose without prior approval by OWNER.
 - 1) Composite samples with analyte concentrations approximating or exceeding acceptable screening criteria, as specified below in paragraphs F through H, may be attributed to constituents within one or more discrete samples. Analyzing the discrettes comprising the composite may reveal the discrete samples with elevated analyte concentrations and, thus, better isolate (and minimize) the volume of soils within the stockpile requiring removal and licensed disposal.
4. Submit draft Soil Certification/Sample Data Report for review and concurrence by OWNER.
 5. Submit final Soil Certification/Sample Data Report to the OWNER. All certified material not utilized or exported within a period of 90 days will be subject to retesting unless a variance is requested by CONTRACTOR and is approved by OWNER prior to use or import/export of the subject materials.
 6. Submit required pre import/export documentation/record to the OWNER, e-mail is acceptable.
 7. Submit post import/export certifications to the OWNER, e-mail is acceptable.
 8. In addition to the preceding, requirements, and as necessary or as specified by OWNER, certifications and submittals as indicated in previous articles of PART 3 or in the remainder of this Section may be required.

- D. Import/export fill materials shall be samples in situ or stockpiled by CONTRACTOR (or at export site) and are deemed acceptable for import/export or reuse only when it is demonstrated to the satisfaction of OWNER that the subject materials meet the requirements of this Section.
- E. As described in paragraph 1.04.A.2.b, lacking site-specific data or sample rationale to support a more focused analytical approach; the CONTRACTOR shall analyze all samples for the following substances according to the methods indicated below. Table 3 is a waste classification flowchart for use by CONTRACTOR's licensed environmental professional. In all cases, detection levels and quality assurance/quality control methods shall be in accordance with standard method reporting limits, best laboratory practices and the following USEPA (EPA) methods for discrete and composite samples:
1. Discrete samples shall be analyzed for Volatile Organic Compounds (VOCs), utilizing EPA Method 8260B/5035 and for Total Petroleum Hydrocarbons (TPH) gasoline (TPH-g), utilizing EPA Method 8015M [with EPA Method 5035 extraction using either volatile organic analysis (VOA) kits, EnCores[®], or an equivalent soil collection device].
 2. Composite samples shall be analyzed for the following:
 - a. TPH, utilizing EPA Method 8015M, for full carbon-chain speciation (including diesel, oil, and other long-chain hydrocarbons).
 - b. Polychlorinated biphenyls, utilizing EPA Method 8082.
 - c. Semi-Volatile Compounds (SVOCs), utilizing EPA Method 8270C.
 - d. Organochlorine Pesticides (OCPs), utilizing EPA Method 8081A.
 - e. Organophosphorous Pesticides (OPPs), utilizing EPA Method 8141A.
 - f. Chlorinated Herbicides, utilizing EPA Method 8151A.
 - g. California Code of Regulations Title 22 (CAM 17) Metals, utilizing EPA Method 6010B/7470A.
 - h. Hexavalent Chromium, utilizing EPA Method 7199.
 - i. Arsenic/Thallium, utilizing EPA Method 6020.
 3. For EPA Method 8270C, a Method Detection Limit (MDL) of 250 ug/kg in addition to the Practical Quantitation Limit (PQL) or equivalent. This requirement is due to a recent DTSC directive requiring MDLs or PQLs to be sufficiently low to detect Carcinogenic Polycyclic Aromatic Hydrocarbons (CPAHs) in the composite sample, even if these compounds exceed actionable concentrations (900 ug/kg) in only one of the three discrete samples comprising the composite.
 4. The certified laboratory may also need to analyze the composite samples for polycyclic aromatic hydrocarbons (PAHs), a component of semi-volatile

compounds, if the data evaluation performed in accordance with paragraph 3.02.G of this Section (01 4524) does not meet DTSC requirements. The analytical methods to be used for this purpose are EPA Method 8270 SIM, if the samples contain relatively high concentrations of hydrocarbons, or EPA Method 8310, if the samples contain low concentrations of hydrocarbons.

- F. Import/export fill material may be deemed defective for use by OWNER at site if any of the following results are obtained:
1. TPH are present at concentrations exceeding 100 milligrams per kilogram (mg/kg) for gasoline and/or 1,000 mg/kg for oil/diesel and long-chain hydrocarbons.
 2. Solvents and other VOCs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
 3. PCBs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
 4. SVOCs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
 5. OCPs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
 6. OPPs are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
 7. Chlorinated herbicides are present at concentrations exceeding the laboratory reporting limit. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
 8. California Code of Regulations Title 22 (CAM 17) Metals at concentrations exceeding site-specific background. Detections between the laboratory reporting limit and the practical quantitation limit (J-flags) should not be reported.
 9. Hexavalent chromium is present at concentrations exceeding 300 ug/kg.
- G. As mentioned in paragraph 3.02.E, evaluate concentrations of CPAHs, a subset of SVOCs, in the import/export material by conducting the analyses set forth below.
1. Comparing CPAH concentrations with the benzo(a)pyrene [b(a)p] equivalent concentration of 900 ug/kg, the background concentration for CPAHs defined in "A Methodology For Using Background PAHs To Support Remediation Decisions," prepared by the Environ Corporation for

the Southern California Gas Company and Southern California Edison, January 24, 2002 (referred to as “document”). In this document, CPAHs are defined in Table 2, and Potency Equivalency Factors (PEFs) for each CPAH are listed in Table 3. Using the correct PEF for each CPAH, the licensed environmental professional shall convert the concentration of each CPAH into its b(a)p equivalent concentration. The summation of these b(a)p equivalents for each CPAH must not exceed 900 ug/kg. If CPAHs do not exceed the laboratory reporting limit, then the licensed environmental professional must perform the procedure described above, using the PEF and the laboratory reporting limit (LRL) for each CPAH. The result will be the LRL for each CPAH converted to b(a)p equivalent concentrations. The summation of these b(a)p equivalent concentrations (representing the LRL for each CPAH) must not exceed 900 ug/kg.

- H. Evaluate concentrations of metals in import fill by conducting the analysis set forth below.
1. Compare the maximum detected metal concentrations in import/export material samples to either DTSC or US EPA regulatory action levels for either residential sites. If any metal concentration exceeds its listed regulatory action level, the fill material fails and shall be deemed defective and unacceptable for use.
 2. In addition to paragraph 3.02.G.1, import/export fill shall be deemed defective and unacceptable for use if any of the following results are obtained:
 - a. Arsenic concentrations greater than or equal to 12.0 mg/kg.
 - b. Lead concentration greater than or equal to 80 mg/kg.
 - c. Import/Export materials at sites with total lead concentrations greater than or equal to 50 mg/kg shall be analyzed for leachability (STLC) prior to export. Materials exceeding STLC limits identified in Table 2 are deemed defective and unacceptable for use.
 - d. Import/Export materials with total chromium concentrations greater than or equal to 100 mg/kg shall be tested for hexavalent chromium.
- I. All export/import material shall be characterized, handled, and documented in accordance with applicable US EPA and State of California hazardous waste and hazardous materials regulations (See Table 2). For the purpose of this specification, “contaminated” shall mean any soil or geotechnical material with constituent concentrations, which would require disposal at a regulated facility (i.e., California hazardous waste or RCRA hazardous waste). Refer to Article 3.03 COSTS which outline the disposal fee requirements for excavated contaminated soil. OWNER must be notified at least 72 hours prior to the disposal of hazardous waste or hazardous material. No material disposal or reuse can take place without prior written approval of OWNER.
- J. Specification test results and OWNER approvals are valid for a period of 90 days from the date of the subject testing unless a variance is requested by CONTRACTOR and approved by OWNER. Previously approved materials shall not be utilized or disposed offsite after the 90 day limit without prior review and approval by OWNER.

- K. Requests for variances to this Specification Section shall be submitted in writing to OWNER a minimum of two weeks in advance of need for review and approval. The request for a variance from soil sampling for export must state the following: “The soil for export is less than 10 cubic yards, has no visible staining, is not odorous, and appears native”. A photograph of the stockpiled soil must be included in the variance request. The photograph must have a representative scale within it in order for OWNER to determine the volume of soil to be exported. The request for variance must provide all available testing data, and a rationale to support the request. OWNER will review the request for variance and will provide its preliminary determination within 72 hours. Once OWNER approves the variance from sampling, the soil stockpile may be removed as “construction related debris”. Certain requests may require final approval by the DTSC.

3.03 TRANSPORTATION

- A. Details of the samples and testing must be submitted to and approved by OWNER before the materials from which the samples were collected undergo transportation.
- B. Haul Routes and Regulations/Restrictions: CONTRACTOR must comply with requirements of project environmental disclosure documents (i.e., CEQA EIR) and authorities having jurisdiction over the project area and the proposed activities (e.g. Regional Water Quality Control Board, DTSC, etc.).

3.04 COSTS

- A. CONTRACTOR shall pay all fees required by authorities having jurisdiction over area.
- B. Contractor shall pay all fees for disposal and/or processing of impacted and/or hazardous fill materials at a regulated facility.
- C. CONTRACTOR shall post and pay for all bonds required by authorities having jurisdiction over area.

TABLE 1: MINIMUM SAMPLING FREQUENCY

Volume (Cubic Yards)*	Sampling Frequency*
0 - 500	1 per 100 CY
501 - 1,000	1 per 250 CY
1,001 - 5,000	1 per 250 CY for first 1000 CY 1 per 500 CY thereafter
> 5,000	12 samples for first 5000 CY 1 per 1000 CY thereafter

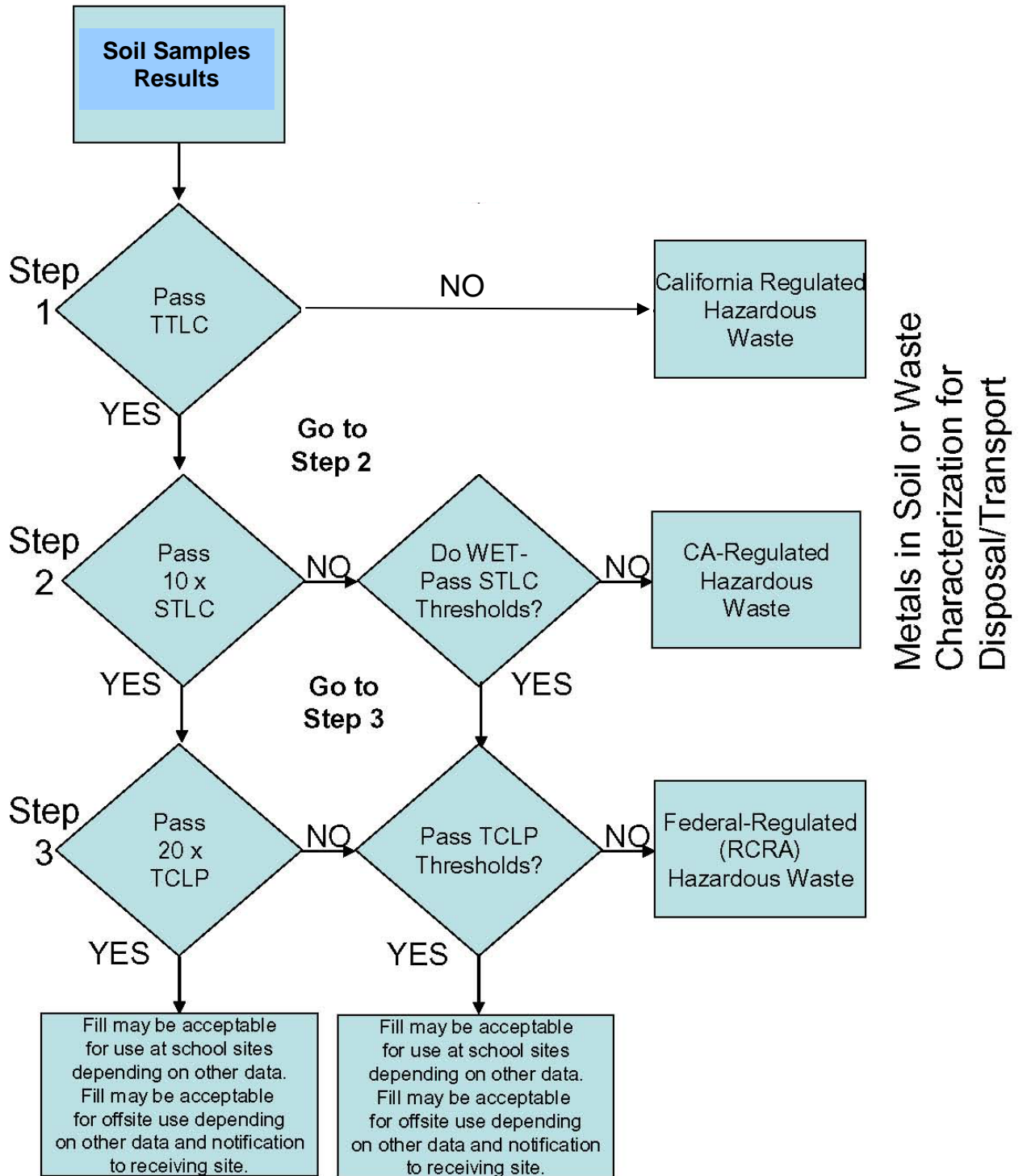
All samples are to be collected, analyzed and accepted before import/export: materials going to licensed facilities must meet sampling criteria from that facility. The rationale for sample approach should be discussed in the draft SSP.

Pothole stockpile sampling may require discrete depth supplemental sampling in order to achieve representative results. The rationale for sample approach should be discussed in the draft SSP. In-situ (in place) sampling by mechanical boring or a hand auger method is acceptable if no space exists to store the soil stockpile at the site with prior OWNER approval.

*Discuss alternative screening & sampling approaches with OWNER representative for project.

Chemicals of Potential Concern	TABLE 2 WASTE CHARACTERIZATION				
	Hazardous Waste if Exceed Criteria - TTLC Level* (mg/kg)	Additional WET Leaching Tests if Exceed Hazardous Waste Criteria - 10 times STLC Level** (mg/kg)	California-Regulated Hazardous Waste - Soluble Threshold Limit Concentration -STLC Level (mg/l)	Additional TCLP Leaching Tests if Exceed Hazardous Waste Criteria - 20 times TCLP Level** (mg/kg)	Federally-Regulated (RCRA) Hazardous Waste - Toxicity Characteristic Leaching Procedure - TCLP Level (mg/l)
CAM 17 Metals					
Antimony	500	150	15	NA	NA
Arsenic	500	50	5	100	5
Barium	10,000	1,000	100	2,000	100
Beryllium	75	7.5	0.75	NA	NA
Cadmium	100	10	1	20	1
Chromium	2,500	50	5	100	5
Cobalt	8,000	800	80	NA	NA
Copper	2,500	250	25	NA	NA
Lead	1,000	50	5	100	5
Mercury	20	2	0.2	4	0.2
Molybdenum	3,500	3,500	350	NA	NA
Nickel	2,000	200	20	NA	NA
Selenium	100	10	1	20	1
Silver	500	50	5	100	5
Thallium	700	70	7	NA	NA
Vanadium	2,400	240	24	NA	NA
Zinc	5,000	2,500	250	NA	NA
<i>Chromium (VI)</i>	500	50	5	NA	NA

TABLE 3 – WASTE CLASSIFICATION FLOWCHART



Metals in Soil or Waste
Characterization for
Disposal/Transport

END OF SECTION

SECTION 01 4525

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 – GENERAL

1.01 SUMMARY

A. SECTION INCLUDES

1. This Section specifies the requirements for test and balance of HVAC and related systems.

B. RELATED REQUIREMENTS

1. Section 01 1100: Summary of Work.
2. Section 01 3113: Project Coordination.
3. Section 01 3213: Construction Schedule.
4. Section 01 3300: Submittal Procedures.
5. Section 01 7700: Contract Closeout.
6. Division 23: Heating, Ventilating and Air Conditioning.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION

3.01 DEFINITIONS AND APPLICABLE PUBLICATIONS

- A. For the purposes of this Section definitions are as indicated in applicable publications of AABC, NEBB, TABB, ASHRAE, ANSI and SMACNA.

1. TAB: Testing, Adjusting and Balancing.
2. TABB: Testing, Adjusting and Balancing Bureau.
3. AABC: Associated Air Balance Council.
4. NEBB: National Environmental Balancing Bureau.
5. ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers.

6. ANSI: American National Standards Institute.
7. SMACNA: Sheet Metal and Air Conditioning Contractors' National Association.

3.02 QUALITY ASSURANCE

- A. The General Contractor shall contract directly with the test and balance agency. Tests performed by testing agencies contracted with the system's subcontractor will not be accepted. The qualifications of the agency shall comply with Article 3.02, Quality Assurance. The agency shall be responsible for furnishing labor, instruments, and tools required to test, adjust, and balance the heating, ventilating, and air conditioning (HVAC) systems and related plumbing systems, as described and/or as indicated in the Contract Documents.
- B. CONTRACTOR shall obtain services of an independent, qualified testing agency acceptable to Architect to perform testing and balancing Work as specified and as follows:
 1. Agency shall be currently certified by either the Associated Air Balance Council (AABC), the National Environmental Balancing Bureau (NEBB), or the Testing, Adjusting and Balancing Bureau (TABB). NEBB or TABB certification shall be for Air and Hydronic Testing, Adjusting and Balancing and Sound and Vibration Measurement.
 2. Work shall be in accordance with the latest edition of the AABC, NEBB, or TABB National Standards. Where the requirements of the two standards are different, the more stringent requirements shall prevail. Also, if the Contract Documents impose a more stringent standard, then the Contract Documents shall prevail.
- C. Performance Criteria: Work of this Section shall be performed in accordance with approved Testing, Adjusting, and Balancing agenda.
- D. Test Equipment Criteria: Basic instrumentation requirements and accuracy/calibration required by Section Two of the AABC, Section II of the NEBB, or TABB Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems.
- E. Verification: The Test and Balance Agency shall recheck 10 percent (minimum 10) of the measurements listed in the report. The locations shall be selected by ARCHITECT. The recheck will be witnessed by ARCHITECT. If 20 percent of the measurements that are retested differ from the report and are also out of the specified range, an additional 10 percent will be tested. If 20 percent fall outside the specified range, the report will be considered invalid and all test and balance work shall be repeated.

- F. Due to more stringent acoustical requirements in the educational environment, the Test and Balance Agency shall recheck the air systems where the sound level is higher than the specified requirements and demonstrate compliance with the methodology specified in this document with emphasis on fan speed adjustment and balancing for optimum acoustical performance. The recheck will be witnessed by ARCHITECT. When there are multiple air systems, a system selected by ARCHITECT shall be rechecked. If this system is found to be not in compliance, a second system shall be checked. If the second system is also found to be not in compliance, the report will be considered invalid, and all test and balance work shall be repeated.

3.03 SUBMITTALS

- A. Submit name of agency to perform the Work. Include in the submittal the certified qualifications of all persons responsible for supervising and performing actual Work of this Section. Agency shall submit a minimum of five commercial or industrial HVAC system TAB projects of similar type, size, and degree of difficulty completed within the last two years. Agency shall provide name and telephone number of contact person for each listed project.
- B. Submit, for approval, 6 copies of the Agenda as indicated in Article 3.06 to test and balance all mechanical and relevant plumbing systems.
- C. Preliminary Report: Review the Contract Documents, examine Work installations and submit a written report to ARCHITECT indicating deficiencies in Work precluding proper testing and balancing of the Work.
- D. Final TAB Report: Submit the final TAB report for review by ARCHITECT outlining the conditions and Work completed on each HVAC system. All outlets, devices, HVAC equipment, etc. shall be identified, along with a numbering system corresponding to report unit identification.
- E. Submit an AABC “National Project Performance Guaranty” or “NEBB Quality Assurance Certification”, assuring the Project systems were tested, adjusted, and balanced in accordance with the Specifications and AABC, NEBB, or TABB National Standards.
- F. CAD drawings: Submit single line, multi-color CAD drawings indicating outside return and supply air, volume control boxes, each outlet and inlet, room numbers, duct sizes at traverse locations, temperatures and pressures, systems balanced, components changed, and CONTRACTOR installed access points. In addition, drawings shall identify controls, equipment settings, including manual damper quadrant positions, manual valve indicators, fan speed control levers, and similar controls, and devices shall be marked on the drawings to show final settings. CAD files shall be submitted on CD-ROM upon final submittal of TAB report. Reports shall identify discrepancies between completed Work and the Contract Documents affecting the performance and longevity of the system.

3.04 GENERAL SCOPE OF WORK

A. The general scope of Work shall include but not be limited to the following:

1. Measure airflow rates of HVAC systems and make adjustments to achieve design airflow rates, tabulate results, and submit reports.
2. Measure water-flow rates of HVAC systems and make adjustments to achieve design water flow rates, tabulate results, and submit reports.
3. Measure flow velocities, temperatures, static pressures or head, rotational speed, and electrical power demand of fans, pumps, and other related HVAC system components, tabulate results, and submit reports.
4. Measure sound levels in each conditioned space, tabulate results, and submit reports.
5. Measure ambient sound levels of outdoor HVAC units and system components such as chillers and cooling towers, tabulate results, and submit reports.
6. Reports shall contain sufficient data for the system designer to evaluate system performance and solve installation problems such as system pressure profiles and pressure drops across system components

3.05 SPECIFIC SCOPE OF WORK

A. The specific scope of Work shall include the following HVAC system components as indicated on the Drawings:

1. Air Handling Units.
2. Air Conditioning Units.
3. Heating and Ventilating Units.
4. Heating and Cooling Coils.
5. Supply, Return, Relief and Exhaust Fans.
6. Outside Air and Return Air Plenums.
7. Outside Air Intakes.
8. All Supply and Return Ductwork.
9. All associated Air Terminal Devices, i.e. Supply Diffusers, Return Registers, etc.

10. Mixing Boxes and Variable Air Volume (VAV) boxes.
11. Reheat Coils (Electric or Hot Water).
12. Exhaust Duct Systems.
13. Fire and Fire/Smoke Dampers.
14. Kitchen Hoods.
15. Laboratory Hoods.
16. Heat Exchangers.
17. Chillers.
18. Cooling Towers.
19. Boilers.
20. Chilled water, heating hot water and cooling tower water pumps.

3.06 TESTING, ADJUSTING, AND BALANCING AGENDA

- A. Provide proposed materials, methods, procedures, forms, diagrams, and reports for test and balance Work.
- B. Agenda to be completed by the test and balance agency and submitted to ARCHITECT for review and approval.
- C. Agenda shall include one complete set of AABC, NEBB, or TABB publications listed in Sub-paragraph 3.02.B.2, applicable publications, or, in case of other test and balance agencies and or organizations, comparable publications to establish an approved, systematic, and uniform set of procedures.
- D. Agenda shall also include the following detailed narrative procedures, system diagrams, and forms for test results:
 1. Specific standard procedures required and proposed for each system of the Work.
 2. Specified test forms for recording each procedure and for recording sound and vibration measurements.
 3. Systems diagrams for each air, water, and steam system. Diagrams may be single line.

- E. In addition to information recorded for standard AABC, NEBB, or TABB procedures, the following information is required:
1. Fan data.
 2. System number, location, manufacturer, model, and serial number.
 3. Fan wheel type and size.
 4. Motor horse power, type, and rpm.
 5. Sheave size, type, number of grooves, and open turns on Variable Pitch Sheave.
 6. Number and size of belts, motor and fan shaft sizes, center-to-center of shafts in inches, and adjustment available motor data, including nameplate data, actual amps, rated, and actual motor rpm, volts, phase, hp, kW, starter heater size, and capacity.
 7. Fan design airflow and service (supply, return, outdoor air or exhaust).
 8. Fan static pressure, suction/discharge, static profile, and static control point.
- F. The following traverse data is required:
1. Traverse location, size of duct (inside dimensions), and area of duct in square feet.
 2. Column for each hole traversed/lines for each reading.
 3. Barometric pressure.
 4. Temperature/Static pressure in the duct.
 5. Actual CFM corrected to SCFM.
 6. Notes.
- G. The following air distribution data is required:
1. Room identification.
 2. Outlet or intake balance sequence number.
 3. Size of outlet or inlet.
 4. AK Factor.

5. Design and Actual FPM and CFM.
 6. Notes.
- H. The following hydronic coil data is required:
1. Air flow through the coil in CFM.
 2. Dry bulb and wet bulb temperatures entering/leaving coil.
 3. Enthalpy or total heat differences in BTU/pound.
 4. Capacity in BTU/hour at time of test.
 5. Water temperature and pressure entering/leaving coil.
 6. Flow (in GPM) through coil.
 7. Air pressure drop across coil.
 8. Water head drop across coil.
 9. Notes.
- I. The following DX coil data is required:
1. Air flow through the coil in CFM.
 2. Dry and wet bulb temperatures entering/leaving coil.
 3. Enthalpy or total heat difference across coil in BTU/ pound.
 4. Capacity in BTU/hour at time of test.
 5. Air pressure drop across coil.
 6. Notes.
- J. The following data is required for steam to water heat exchangers for heat and/or domestic generation:
1. Exchanger identification number.
 2. Nameplate data; manufacturer, model, and serial number.
 3. Temperature entering/leaving unit.
 4. Flow through unit in GPM.

5. Pressure drops through unit.
 6. Entering steam pressure.
 7. Notes.
- K. The following electric heating coil data is required:
1. Heating coil identification number.
 2. Nameplate data; manufacturer, model and serial number.
 3. Amperage/Voltage on each phase.
 4. Phase, kW, and Stages.
 5. Safety device installed.
 6. Air pressure drop across coil.
 7. Notes.
- L. The following water-cooled chiller data is required:
1. Identification number.
 2. Nameplate data; manufacturer, model and serial number.
 3. Chilled water flow through evaporator in GPM.
 4. Water temperature entering/leaving evaporator.
 5. Pressure drop through evaporator.
 6. Condenser water flow through.
 7. Pressure drop through condenser.
 8. Water temperature entering/leaving condenser.
 9. Motor data, amps, volts, rpm, starter type, overload protection type, phase, hertz, nameplate, and actual measured kW input.
 10. Type of refrigerant.
 11. Notes.
- M. The following cooling tower data is required:

1. Identification number.
2. Nameplate data; manufacturer, model and serial number.
3. Performance test results for rated capacity.
4. Water flow through the tower in GPM.
5. Water temperature entering/leaving tower.
6. Outside Air dry and wet bulb temperatures.
7. Motor data, amps, volts, phase, hertz, and kW input.
8. Starter size and type and heater size and capacity.
9. Water droplets leaving tower - yes/no.
10. Water balanced across tower pans and basins.
11. Airflow across the tower within design rating according to fan curves.
12. Notes.

N. The following boiler and domestic water heater data is required:

1. Performance test results for rated capacity.
2. Boiler identification number.
3. Nameplate data; manufacturer, model, and serial number.
4. Water temperature entering/leaving the boiler.
5. Outside conditions: temperature, humidity, general cloud cover.
6. Barometric pressure.

O. The following air-cooled split system condensing unit data is required:

1. Performance test results for rated capacity.
2. Unit identification number.
3. Nameplate data, manufacturer, model, and serial number.
4. Compressor nameplate and actual amps, volts, phase, and hertz.
5. RPM of motors, where applicable.

6. Refrigerant type.
7. Suction/Discharge pressure when gage installed.
8. Number of stages.
9. Low-pressure/High-pressure control setting.
10. Condenser fan sequence stages.
11. Crankcase heater watts (nameplate).
12. Hot gas bypass installed - yes/no.
13. SCFM Air Flow Measurement vs. Design CFM.

P. The following air-cooled split system heat pump data is required:

1. Performance test results for rated heating and cooling capacities.
2. Unit identification number.
3. Nameplate data, manufacturer, model, and serial number.
4. Compressor nameplate and actual amps, volts, phase, and hertz.
5. RPM of motors, where applicable.
6. Refrigerant type.
7. Suction/Discharge pressure for both heating and cooling modes when gage installed.
8. Number of stages.
9. Low-pressure/High-pressure control setting.
10. Condenser fan sequence stages.
11. Crankcase heater watts (nameplate).
12. Hot gas bypass installed - yes/no.
13. SCFM Air Flow Measurement vs. Design CFM.

Q. The following sound test data is required:

1. Area or location.

2. Sound level in dB(A) as specified in Article 3.19.
 3. Sound level at the center band frequencies of eight non-weighted octaves with equipment on and off for 5 rooms selected by the ARCHITECT.
 4. Plot of corrected sound-level reading on Noise Criteria (NC) curve for the measurements in Q 3 above.
- R. The following vibration test data is required:
1. Equipment identification number.
 2. Vibration levels at all accessible bearings, motors, fans, pumps, casings, and isolators.
 3. Measurements in mils deflection and velocity in inches per second.
 4. Each measurement taken in horizontal, vertical, and axial planes as accessible.
- S. The following mixing damper leakage test data is required:
1. Equipment identification number (unit, box, zone, etc.).
 2. Dry bulb temperature in the cold/hot (or bypass) deck.
 3. Dry bulb temperature in the mixed air stream.
 4. Calculated percent leakage.
 5. Data above taken in the full cool and full heat (or bypass) mode.
 6. Notes.
- T. The following airflow station data is required:
1. Station identification number.
 2. Nameplate data including effective area.
 3. Differential test pressure or velocity.
 4. Calculated CFM.
 5. Actual CFM (from Pitot-tube traverse form).
 6. Read out CFM.
 7. Notes

- U. The following unit heater data is required:
 - 1. Equipment identification number.
 - 2. Nameplate data; manufacturer, model, and serial number.
 - 3. Test CFM (use manufacturer rated CFM if not ducted).
 - 4. Heat test data per applicable procedure (hot water, electric, etc.).
 - 5. Notes.

- V. The following fan coil and unit ventilator data is required:
 - 1. Equipment identification number.
 - 2. Nameplate data; manufacturer, model, and serial number.
 - 3. Tested supply CFM or manufacturer rated CFM if not ducted.
 - 4. Tested outside air in CFM.
 - 5. Motor data and actual amps and volts.
 - 6. Cooling/Heating test data.
 - 7. Static pressure.
 - 8. Notes.

- W. The following kitchen hood data is required:
 - 1. Hood identification number.
 - 2. Nameplate data; manufacturer, model, and serial number.
 - 3. Pitot-tube traverse total air flow.
 - 4. Exhaust and supply (when part of hood) CFM.
 - 5. Exhaust and supply (when part of hood) test velocities shown on hood face diagram.
 - 6. Face velocities.
 - 7. Hood opening dimensions.
 - 8. Notes (turbulence and flow patterns at the face and inside the hood).

- X. The following laboratory hood data is required:
1. Hood identification number.
 2. Nameplate data; manufacturer, model, and serial number.
 3. Pitot-tube traverse total air flow.
 4. Exhaust and supply (when part of hood) CFM.
 5. Exhaust and supply (when part of hood) test velocities shown on hood face diagram.
 6. Face velocities.
 7. Hood opening dimensions.
 8. Notes (turbulence and flow patterns at the face and inside the hood).
- Y The following data for water-to-water heat exchangers for domestic and/or heating is required:
1. Exchanger identification number.
 2. Nameplate data; manufacturer, model, and serial number.
 3. GPM and Pressure drop through each side.
 4. Capacity of each side.
 5. Notes.
- Z. The following pump data, including but not limited to, chilled water, heating hot water, cooling tower water, boiler feed, domestic hot water booster, domestic hot water circulation, sewage ejectors, sump pumps and domestic hot water booster is required:
1. Pump number.
 2. Nameplate data; manufacturer, model, and serial number.
 3. Motor data including nameplate data, actual amps, volts, RPM, horsepower, starter heater size, and capacity.
 4. Pump discharge and suction pressure along with total dynamic head in the following modes.
 5. Shut-off head FT, Wide open Head FT, and Final operating Head FT.

6. Final GPM Test plotted on a pump curve.
7. Notes.

AA. The following water flow station data is required:

1. Station identification number.
2. Nameplate data; manufacturer, model, and serial number.
3. Design and actual GPM.
4. Differential test pressure.
5. Setting (open turns, degree, etc.) if required GPM.
6. Notes.

BB. The following terminal box data is required:

1. Box identification number.
2. Node, address, or designation on system.
3. Box size.
4. Cooling CFM.
5. Minimum CFM (if applicable).
6. Heating CFM (if applicable).
7. Box fan amps and volts (if applicable).
8. For DDC controlled boxes, record computer readout maximum, minimum, and heat, along with box correction factor for calibrating to true CFM.
9. Notes.

3.07 PROCEDURES

- A. Schedule the Work of this Section in order for test and balance activities to be completed prior to the date of Substantial Completion. CONTRACTOR shall place all heating, ventilating, and air conditioning equipment into operation during each day and until all HVAC adjusting, balancing, testing, demonstrations, and instructions on systems are completed. Agency shall prepare and submit reports within ten (10) days from completion of the Work of this Section to allow sufficient time for corrective measures to be completed before Substantial

Completion of the Work. When an individual building or portion thereof is ready for occupancy, all equipment relative to such portion of Work shall be put into service, tested, and balanced.

- B. Prior to the date of Substantial Completion, and upon completion of test and balance Work, place all exhaust fans in operation, force all air handling units, and air conditioning units into a 100 percent outdoor air economizer mode with heating and cooling locked out and flush the building continuously for a period of fourteen (14) days.
- C. Coordinate test and balance procedures with any phased Project requirements so test and balance procedures on each phased portion of the Work will be completed prior to completion of said designated phase.

3.08 FIELD EXAMINATION

- A. Before the commencement of test and balance Work, CONTRACTOR shall ascertain that following conditions are fulfilled:
 - 1. Ensure that all water heating and water cooling systems have been flushed, cleaned, and filled and high points vented.
 - 2. Boilers (steam and hot water) are filled.
 - 3. Refrigerant systems are fully charged with specified refrigerant.
 - 4. Over-voltage and current protection have been provided for motors.
 - 5. Equipment has been labeled as required.
 - 6. Curves and descriptive data on each piece of equipment to be tested and adjusted are available as required.
 - 7. Operations and maintenance manuals have been supplied.
 - 8. Controls manufacturer and boiler-burner representatives shall be available for consultation and supervision of adjustments during tests.
 - 9. Verify that heating and cooling coil fins are cleaned, combed and air filters clean, and installed.
 - 10. Verify that duct systems are clean of debris and leakage is minimized, access doors are closed and duct end caps are in place, and fire and volume dampers are in place and open.
 - 11. Automatic control systems are completed and operating.

12. Start up and initial commissioning of all HVAC equipment except fans shall be by the manufacturer.
- B. In addition to the above, CONTRACTOR shall establish a specific, coordinated plan which details how each area of existing building will be balanced during the various phases of the Work. The evaluation shall address, at a minimum, the following concerns:
1. OWNER operations.
 2. Building safety and security policies. Prior to any fire safety or security systems shutdown at any time during the Work, CONTRACTOR shall first advise and coordinate with OWNER to ensure all concerned parties are notified.
 3. Protecting furniture, computers, photocopiers, and other office equipment.
 4. Protecting classroom fixtures and equipment.
 5. Concerns specific and unique to building related issues.
 6. Downtime required for each Air Handling Unit including projected time to return each portion of the building back to its normal occupancy temperature and humidity.
 7. Shutdown and reactivation of the fire alarm system to avoid accidental alarms during test and balance and related Work.

3.09 TEST AND BALANCE

- A. For each heating, ventilating, or air conditioning system the following shall be performed, recorded, and submitted in an approved format for review. Make, type, and model of unit, and location of each piece of equipment shall be included in the report. Readings shall include but not be limited to following:
1. Air Systems:
 - a. General
 - 1) Verify all ductwork, dampers, grilles, registers, and diffusers have been installed per design and set in the full open position. Agency shall perform the following TAB procedures in accordance with AABC or NEBB National Standards. Where the requirements of the two standards are different, the more stringent requirements shall prevail. Also, if the Contract Documents impose a more stringent standard then the Contract Documents shall prevail.

- b. Zone, Branch, and Main Ducts:
 - 1) Adjust ducts to within design CFM requirements by means of Pitot-tube duct traverse.
- c. Supply Fans:
 - 1) Fan Speeds: Test and adjust fan RPM to achieve maximum or design CFM. CONTRACTOR shall provide new belt pulleys when required.
 - 2) Current and Voltage: Test and record motor voltage and amperage, and compare data with the nameplate limits. Ensure fan motor is not in or above the service factor as published by the motor manufacturer.
 - 3) Pitot-Tube Traverse: Perform a Pitot-tube traverse of main supply and return ducts, record total CFM.
 - 4) Outside Air: Test and adjust the outside air using Pitot-tube traverse.
 - 5) Static Pressure: Test and record system static profile of each supply fan.
 - 6) Current and Voltage: Test and record motor voltage and amperage, and compare data with the nameplate limits. Ensure fan motor is not in or above the service factor as published by the motor manufacturer.
- d. Return, Relief, and Exhaust Fans:
 - 1) Fan Speeds: Test and adjust fan RPM to achieve maximum or design CFM. CONTRACTOR shall provide new belt pulleys where required.
 - 2) Pitot-Tube Traverse: Perform a Pitot-tube traverse of the main return ducts to obtain total CFM.
 - 3. Static Pressure: Test and record system static profile of each fan.
- e. VAV Systems:
 - 1) Set volume regulators on all terminal boxes to meet design maximum and minimum CFM requirements.

- 2) Identification: Identify the type, location, and size of each terminal box. This information shall be recorded on terminal box data sheets.
- f. Diffusers, Registers and Grilles:
- 1) Tolerances: Test and balance each diffuser, grille, and register to within 5 percent of design requirements.
 - 2) Identification: Identify the type, location, and size of each grille, diffuser, and register. This information shall be recorded on air outlet data sheets.
- g. Coils: Air Temperature: Once airflow is set to acceptable limits, agency shall take wet bulb and dry bulb air temperatures on the entering and leaving side of each cooling coil. Dry-bulb temperature shall be taken on the entering and leaving side of each heating coil.
- h. Duct Leakage Testing:
- 1) On existing ductwork, agency shall calculate duct leakage by traversing the unit and reading associated diffusers.
 - 2) On new installations each and every section of the entire air distribution system (all supply, return, exhaust, and relief ductwork) shall be tested at 1.5 times design static pressure. All ducts shall demonstrate 5 percent leakage maximum (per CBC).
- i. Air Handling Units:
- 1) Prepare pressure profile and show design and actual CFM (outside air, return air, and supply air).
 - 2) Measure and record each mode (minimum OA and 100 percent OA) where economizer cycle is specified.
 - 3) Record pressure drops of all components (coils, filters, sound attenuators, louvers, dampers, and fans) and compare with design values.
 - 4) Pressure profile and component pressure drops are performance indicators and are not to be used for flow measurements.
- j. System Pressure Profiles:

- 1) Prepare pressure profiles from fan (supply, return, and exhaust) or air handling unit to extremities of system.
 - 2) As a minimum, show pressure at each floor, main branch, and airflow measuring device.
 - 3) Make pitot-tube traverses of all trunk lines and major branch lines where required for analysis of distribution system. Airflow measuring devices installed in ductwork, if available, may be utilized.
 - 4) Record residual pressures at inlets of volume controlled terminals at ends of system.
 - 5) Show actual pressures at all static pressure control points utilized for constant or variable flow systems.
- k. Fan speed adjustments and balancing for optimum acoustical performance:
- 1) As the very first step, the speed of all fans (supply, return, and exhaust inside packaged equipment or air handling units) shall be adjusted to deliver the required fan total air quantity with all volume dampers and other flow rate control devices fully open. Adjustments shall be made with the outdoor air intake dampers, return air dampers, and relief air dampers in the minimum outdoor air position. The adjustments shall be made again in the 100 percent outdoor air position in systems with 100 percent outdoor air economizers.
 - 2) The above adjustment shall be done with wet cooling coils, where cooling coils are provided.
 - 3) The airflow rates at each branch duct shall be adjusted as the second step with air with all volume dampers and other flow rate control devices fully open.
 - 4) The airflow rates at each air inlet and outlet shall be adjusted as the final step. The volume damper in the branch duct shall be used for balancing. Opposed blade dampers at air inlets and outlets where provided shall only be used for fine adjustments and shall not be closed beyond 60 percent open or when the dampers start to generate audible noise.

5) CONTRACTOR shall provide the labor and materials for all dampers, pulleys, and belt changes required for balancing. The design documents indicate the worst-case scenario with safety factors in fan static pressures for contingency. Properly coordinated and installed air systems may require a lower static pressure and a reduction in fan speed.

2. Water Systems: CONTRACTOR shall confirm all equipment, piping, and coils have been filled and purged, strainers are clean, and all balancing valves (except bypass valves) are set full open. Agency shall perform the following TAB procedures in accordance with the AABC, TABB, or NEBB National Standards:

B. Pumps:

1. Test and adjust chilled water, hot water, and condenser water pumps to achieve maximum or design GPM.
2. Measure and record suction and discharge pressures.
3. Check pumps for proper operation. Pumps shall be free of vibration and cavitation.
4. Current and Voltage: Agency shall test and record motor voltage and amperage and compare data with the nameplate limits. Ensure pump motor is not in or above the service factor as published by the motor manufacturer.
5. Adjust pump flow by adjusting and setting balancing valves to obtain amperage reading on a clamp-on ammeter that corresponds to amperage indicated on pump's curves for required flow.
6. Verify that the motor is not drawing more current than indicated on motor plate rating. When actual flows of primary pumps are found by test to vary more than 5 percent from specified amount, system shall be re-balanced to regulate flow within this tolerance. When a flow indicating device(s) is in circuit, it shall be used to verify pump flows.
7. When testing is completed, a pump capacity chart with pump number and location indicated shall be marked indicating operating point of pump on the curve. Chart shall then be included in the report.

C. Cooling Towers:

1. Test and balance water flows, balance tower cells, and flows between towers.

2. Test and record temperature profiles for water and airside operation.
 3. Outside Climatic Conditions: Outside air dry bulb (DB) temperature, wet bulb (WB) temperature, and atmospheric conditions, during temperature profile runs.
- D. Chillers: (Start-up and initial commissioning by manufacturer only.)
1. Test and balance chiller water flows to achieve maximum or design GPM.
 2. Current and Voltage: Test and record motor voltage and amperage, and compare data with the nameplate limits. Ensure compressor motor is not in or above the service factor as published by the motor manufacturer.
 3. Test and record temperature and pressure profiles of chillers.
 - a. Inlet and outlet water temperature.
 - b. Inlet and outlet water pressure.
 - c. Evaporator temperature.
 - d. Condensing temperature pressure.
 - e. Purge pressure.
 - f. Oil temperature and pressure.
 4. Outside Climatic Conditions: Outside air DB temperature, WB temperature, and atmospheric conditions, during temperature profile runs.
- E. Boilers: (Start-up and initial commissioning by manufacturer only.) Test and balance boilers only after test and balance of pumps have been completed. Boilers shall not be initially operated or tests performed with students or faculty on the Project site. Boilers shall be tested for the following:
1. Heating Hot Water Boilers and Domestic Hot Water Boilers:
 - a. Current and Voltage: Test and record motor voltage and amperage, and compare data with the nameplate limits. Ensure motor is not in or above the service factor.
 - b. Test and balance water flow through water boilers.
 - c. Test and record temperature and pressure profiles of water and/or steam boilers.

- d. Upon completion of tests, controls and devices shall be returned to their normal operating condition and boiler shall remain in service.
 - 2. Steam Boilers: Start-up and initial commissioning by manufacturer only.
- F. Heat Exchangers:
- 1. Steam to Hot Water Heat Exchanger: Steam pressure, entering and leaving hot water temperatures, gpm flow, pressure drop, and control set point.
 - 2. Water to Water Heat Exchanger:
 - a. Primary Heating Water: Entering and leaving hot water temperatures, gpm flow, and pressure drop.
 - b. Secondary Heated Water: Entering and leaving hot water temperatures, gpm flow, pressure drop, and control set point.
- G. Coils:
- 1. Tolerances: Test and balance all chilled-water and hot-water coils within 5 percent of design requirements.
 - 2. Verify the type, location, final pressure drop, and GPM of each coil.
- H. System Mains and Branches including chilled water, heating hot water, cooling tower water, domestic hot water and domestic cold water:
- 1. Balance water flow in pipes to achieve maximum or design GPM.
- I. Steam Heating Systems:
- 1. Heating Coils: Steam pressure at coils, cfm, coil pressure drop, entering and leaving air dry bulb temperatures.
 - 2. Boilers:
 - a. Steam pressure, temperature, and quantity of feed-water (see Testing and Adjusting procedures).
 - b. Make, type, serial number, and rated capacity.
 - c. Flue gas temperature at boiler outlet ahead of back-draft diverter.
 - d. Percent carbon dioxide in flue gas.
 - e. Condensate quantities and temperatures.

3. Air Conditioning Units: (Start-up and initial commissioning by manufacturer only.)
 - a. Suction pressure and temperature.
 - b. Discharge pressure and temperature.
 - c. Amps and volts.
 - d. Make, type, and model of unit, capacity rating.
 - e. Ambient temperature: WB, DB.
 - f. Supply, return, relief, and exhaust fans shall be balanced as indicated in Section 3.09, A, 1, Air Systems.
 - g. Proper operation of controls: Temperature controllers and safety devices shall be tested during operating tests, with all other controls and devices, except one under test, being by-passed.
 - h. Upon completion of tests, controls and devices shall be returned to their normal operating condition and boiler shall remain in service.
4. Condensing and Refrigerating Units: (Start-up and initial commissioning by manufacturer only.)
 - a. Suction pressure and temperature.
 - b. Discharge pressure and temperature.
 - c. Amps and volts.
 - d. Make, type, and model of unit, capacity rating.
 - e. Ambient temperature: WB, DB.
 - f. Proper operation of controls: Temperature controllers and safety devices shall be tested during operating tests, with all other controls and devices, except one under test, being by-passed.
 - g. Upon completion of tests, controls and devices shall be returned to their normal operating condition and boiler shall remain in service.
5. Split System Heat Pump Units: (Start-up and initial commissioning by manufacturer only.)
 - a. Suction pressure and temperature.

- b. Discharge pressure and temperature.
- c. Amps and volts.
- d. Make, type, and model of unit, capacity rating.
- e. Ambient temperature: WB, DB.
- f. Supply, return, relief and exhaust fans shall be balanced as indicated in Sub-paragraph 3.09.A.1, Air Systems.
- g. Proper operation of controls: Temperature controllers and safety devices shall be tested during operating tests, with all other controls and devices, (except one under test) being by-passed.
- h. Upon completion of tests, controls and devices shall be returned to their normal operating condition and boiler shall remain in service.

6. MISCELLANEOUS:

- a. Electric Heaters:
 - 1. Amperage.
 - 2. Voltage.
 - 3. Make, type, model, and name plate capacity rating.

3.10 VERIFICATION OF HVAC CONTROLS

- A. Agency shall verify in conjunction with CONTRACTOR all control components are installed in accordance with the intent of the Contract Documents and are functioning according to the design intent, including all electrical interlocks, damper sequences, air and water resets, fire stats, and other safety devices.
- B. CONTRACTOR shall verify all control components are calibrated and set for design operating conditions and intent.

3.11 TEMPERATURE TESTING

- A. To verify system control and operation, agency shall perform a series of three temperature tests taken at approximately two hour intervals in each separately controlled zone. The resulting temperatures shall not vary more than two degrees Fahrenheit from the thermostat or control set point during the tests. Outside temperature and humidity shall also be recorded during the testing periods.

3.14 BUILDING/ZONE PRESSURIZATION

- A. Agency shall test and adjust building/zone pressurization by setting the design flows to meet the required flow direction and pressure differentials. Positive/Negative area(s) supply air shall be set to design flow and exhaust air rates adjusted to obtain the required pressure differential(s).

3.15 FIRE AND SMOKE DAMPER TESTING

- A. This work is to be performed by OWNER and State Fire Marshall. Do not include in agency scope of work.

3.16 LIFE SAFETY CONTROLS TESTING

- A. This work is to be performed by OWNER and State Fire Marshall. Do not include in agency scope of Work.

3.17 FINAL TABULATION

- A. After heating, ventilating, and air conditioning components are satisfactorily tested and balanced, entire system shall be put into operation and all pressures, temperatures, gpm, cfm, velocities, etc., shall be recorded and checked against design schedules. Design requirements shall be listed on reports and final tabulation shall be within a tolerance of plus or minus five percent of design requirements.
- B. Readings at various locations as described herein will be made every hour for four (4) hours, during normal working hours for three (3) days. Boilers, forced air furnaces, and chillers shall be started up far enough in advance to meet design conditions during period of testing.

3.18 VIBRATION TESTING

- A. Furnish instruments and perform vibration measurements if specified in Division 23. Provide measurements for all rotating HVAC equipment half horsepower and larger, including reciprocating/centrifugal/screw/scroll compressors, pumps, fans, and motors.
- B. Record initial and final measurements for each unit of equipment on test forms. Where vibration readings exceed allowable tolerance and efforts to make corrections have proved unsuccessful, forward a separate report to ARCHITECT.

3.19 SOUND TESTING

- A. Perform and record sound measurements as specified in this Section and in Section 23 0548: HVAC Sound, Vibration and Seismic Control. Take additional readings if required by ARCHITECT.

- B. Measuring equipment and methods shall comply with the current requirements of the AABC, NEBB, TABB and ANSI S12.60. Take measurements with a calibrated Type 1 sound level meter and octave band analyzer.
- C. Sound reference levels, formulae, and coefficients shall be according to ASHRAE Handbook: HVAC Applications, Chapter on Sound and Vibration Control.
- D. Where sound pressure levels are specified as noise criteria or room criteria in Section 23 0548: HVAC Sound, Vibration and Seismic Control determine compliance with the Contract Documents as follows:
1. Reduce background noise as much as possible by shutting off unrelated audible equipment.
 2. Measure octave band sound pressure levels with specified equipment "off".
 3. Measure octave band sound pressure levels with specified equipment "on".
 4. Use difference in corresponding readings to determine sound pressure due to equipment. Sound pressure level, due to equipment equals sound pressure level with equipment "on" minus factor.

DIFF.:	0	1	2	3	4	5	9-10 or More
FACTOR:	10	7	4	3	2	1	0
 5. Plot octave bands of sound pressure level due to equipment for typical rooms, on a graph, which also shows, noise criteria (NC) curves.
- E. Where sound levels are required in dbA, measure sound levels using the A-frequency-weighting of meter. Single value readings will be used instead of octave band analysis.
- F. Measure sound levels at each octave band as NC or RC (room criteria) if indicated in the Drawings or other Spec Sections. Where measured sound levels exceed specified level, CONTRACTOR shall take all remedial action and necessary sound tests shall be repeated. Sound tests after remedial action shall be in octave band in NC or RC for the room and also at each diffuser, grille, or register in occupied areas. Sound levels shall be measured approximately five feet above floor on a line approximately 45 degrees to center of opening, on the A- and C-frequency-weighting of the measuring instrument.
- G. Measure and record sound levels in decibels for each room per current ANSI S12.60.
- H. Report shall include ambient sound levels, taken without air-handling equipment operating, of rooms in which above openings are located. A report shall also be made of any noise caused by mechanical vibration.

111001

END OF SECTION

SECTION 01 5000

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities, construction facilities and temporary controls to be provided, maintained, relocated, and removed by CONTRACTOR.
- B. Temporary office furnishings and office equipment.
- C. Project signage.

1.02 QUALITY ASSURANCE

- A. CONTRACTOR shall comply with applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:
 - 1. Building Code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, fire department and rescue squad requirements.
 - 5. Environmental protection regulations.
- B. CONTRACTOR shall arrange for the inspection and testing of each temporary utility prior to use. Obtain required certifications and permits and transmit to OWNER.
- C. CONTRACTOR provided facilities are to be in place and available for OWNER use and occupancy within (Insert Number of Days) calendar days following the date of issue of the Notice to Proceed and shall remain in place and available for OWNER use and occupancy throughout the full term of the Contract.

1.03 SUBMITTALS

- A. Temporary Utilities: Submit to OWNER reports of tests, inspections, meter readings, certifications, permits and similar procedures performed on temporary utilities.

- B. Project Signage / Banner: Submit to OWNER for review and approval.
 - 1. Shop Drawings: Elevation showing the text, OWNER sign and color of project signage, jointing, fittings and location of grommets.
 - 2. Certification: Submit certification attesting fabric is certified as flame retardant, in accordance to NFPA 701, Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

1.04 PROJECT IDENTIFICATION SIGNAGE / BANNER

- A. CONTRACTOR shall furnish and install two Project Signs / Banners on the Project site at a location established by OWNER. OWNER will provide the information to be posted on the sign. A draft of the proposed sign shall be submitted to OWNER for review before fabrication.
 - 1. Sign Size: Ten feet wide by four feet high, tie wire grommets to fence / barricade.
 - 2. The following shall be listed on the sign:
 - a. OWNER
 - b. Name of Project.
 - c. Name of the Architect/Engineer.
 - d. Name of CONTRACTOR.
- B. Products of the following manufacturers form the basis for design and quality intended: 3M, MACtac North America, or equal, and shall meet the following requirements:
 - 1. Flame retardant, heavy duty durable vinyl material, super smooth, minimum 16 ounces per layer.
 - 2. Banners shall be cut with accurate angles and straight edges. Edges of banner shall be heat welded on four sides without causing fabric separation or otherwise damaging the work.
 - 3. Banners shall have on both sides a clear, permanent, anti-graffiti coating that shall be durable and last a minimum of two years. Cleaning or removal of graffiti shall not cause damage to the anti-graffiti coating or image, or cause it to flake, yellow, bubble, peel or fade.

4. Ink used in the printing process shall be of the highest quality OEM inks, and have integral UV protective components.
 5. Banners shall be provided with ½ inch diameter grommets along the top and the bottom edges, spaced not more than 30 inches on center. Grommets shall be 4 inches, minimum, from the edges of the banner.
- C. No other signs shall be displayed without approval of OWNER. At CONTRACTOR'S expense and without limitation remove and/or relocate Project signage and related facilities as rapidly as required in order to provide for progress of the Work.
- D. CONTRACTOR shall remove Project Signage / Banner at Substantial Completion of the Work.

1.05 TEMPORARY UTILITIES

- A. CONTRACTOR shall coordinate with the appropriate utility company to install temporary services. Where the utility company provides only partial service, CONTRACTOR shall provide and install the remainder with matching compatible materials and equipment.
- B. CONTRACTOR shall furnish, install and pay for all necessary permits, inspections, move ins/out, temporary lines, connections and fees, extensions and distribution, metering devices and use charges, deliveries/pickups, rentals, storage, transportation, taxes, labor, insurance, bonds, material, equipment and all other miscellaneous items for the temporary utility systems. CONTRACTOR shall pay to utility companies for the consumption of the following temporary utility services:
1. Temporary Water service.
 2. Temporary Electrical service.
 3. Temporary Gas service.
 4. Temporary Telephone and Data.
- C. Maintain, extend and/or relocate temporary utility systems as rapidly as required in order to provide for progress of the Work.
1. Water distribution piping and outlet devices shall be of the size and required flow rates in order to provide service to all areas of the Project site.
 2. Furnish, install, maintain, extend and distribute temporary electric area distribution boxes, so located that individual trades can obtain adequate

power and artificial lighting, at all points required for the Work, for inspection and for safety.

- a. Provide 20 foot candles minimum lighting levels inside building(s) and 5 foot candles outside for safety and security.
 - b. Ensure welding equipment is supplied by electrical generators.
3. Provide temporary Heating, Ventilation and Air Conditioning. OWNER will not accept utilization of the permanent HVAC system for temporary HVAC until Substantial Completion. CONTRACTOR shall maintain manufacturer required levels of room and/or space temperature, humidity and ventilation necessary to install products, materials and/or systems, cure materials, disperse humidity, remove fumes, and prevent accumulation of dust, irritants, or gases.
 4. Provide temporary phone, data service and distribution to Project site temporary offices.
- D. Upon Substantial Completion of the Work, remove temporary systems, devices and appurtenances.

1.06 TEMPORARY OFFICES

- A. CONTRACTOR shall provide Project Site temporary office facilities for his own use, and in addition shall provide and maintain a minimum of one **{insert trailer size} {new}** construction trailer on the Project site for use by OWNER for the duration of the Work. Construction trailer shall be accessible by OWNER on a 7 day a week 24-hour basis. CONTRACTOR shall provide the necessary materials and labor to provide the trailer with access for disabled persons on request by the OWNER. Trailer shall include, at a minimum, the following:
1. Conference room with a table and adequate seating for twelve.
 2. One bathroom.
 3. An open work area with devising partitions as required by OWNER.
 4. Two enclosed, separate offices with windows and lockable doors.
- B. Trailer shall be furnished with two exterior entrance doors with one located in a separate office. Each door shall be furnished with 'Smart Key' technology on both the dead bolt and cylinder lock. Provide six keys for each locking device. Exterior doors and windows shall be provided with exterior mounted burglar bars. Windows shall be provided with operable window shades. Security of trailer and contents is

a continuous obligation of CONTRACTOR and shall be equipped with local sounding security system.

- C. Trailer shall have ample headroom, 8-foot minimum, and shall be lighted, heated, ventilated, and air-conditioned. Provide an electrically chilled bottled water fountain of 5-gallon capacity. Purified water shall be supplied in 5-gallon containers, delivered weekly, with four spares on hand after each re-supply visit. As an option, CONTRACTOR may maintain a minimum of two 24 500ml bottles cases of purified water in owner trailer throughout the duration of the project.
- D. The separate offices shall each be approximately 120 square feet in size and shall be furnished with a minimum of four 120 volt single phase convenience outlets with one 4' long multi-outlet power strip (such as Legrand Model #PM48C) at each outlet location as well as one telephone jack and one data/LAN outlet. The conference room shall be approximately 200 square feet in size and shall be furnished with a minimum of eight 120 Volt single phase convenience outlets with one telephone jack and one data/LAN outlet.
- E. CONTRACTOR shall coordinate floor plan and location of electrical, telephone, data outlets with OWNER prior to ordering and delivering the trailer.
- F. At CONTRACTOR'S expense and without limitation remove and/or relocate temporary office(s) and related facilities as rapidly as required in order to provide for progress of the Work.
- G. CONTRACTOR shall remove waste bin trash from OWNER'S trailer, vacuum OWNER'S trailer floors and/or mop OWNER'S trailer floors once per week. Provide trailer with bathroom paper goods, soap, broom, mop and doormats.
- H. Trailer shall remain property of CONTRACTOR. CONTRACTOR shall remove such property upon Substantial Completion of Work or as otherwise determined in writing by OWNER.

1.07 FURNISHINGS

- A. CONTRACTOR shall provide **{new}** furnishings in the following quantities, shall set in rooms and shall position as directed by OWNER upon delivery:
 1. **{Insert quantity}** rolling mid-back task chairs, with arms, Allseating Inertia Mesh Back Basic Synchro Tilt 77089-T2-FM-NSBL-LH-BKN-OG17 Gray Mesh, Gray Matters Enviroleather, warranty 24/7 lifetime, or equal, shall be provided new and shall remain as OWNER's property.
 2. **{Insert quantity}** padded meeting chairs, Allseating 77054-NA-GM-FM-NGRY-FV-ARIVR, Gray Matters Enviroleather, warranty 24/7 lifetime, or equal shall be provided new and shall remain as OWNER's property.

3. **{Insert quantity}** desks, 30 by 66 by 30 inches: Haworth Adaptables WURA-3066-LJSC H-AE Graphite worksurface, Haworth Reside Adjustable Hoop Leg ZKH2-3000-PNFD TR-J Graphite (2 per desk), Haworth X Series Pedestal JPMH-24-SJ B/B/F TR-J Graphite (2 per desk), lifetime warranty, or equal, shall be provided new and shall remain as OWNER's property.
 4. **{Insert quantity}** metal bookcases, three shelf, 41 by 34 by 12 inches; HON Brigade or equal (Similar to Staples Cat.# 793638; Item: 1598509/ Model: HS42ABCL).
 5. **{Insert quantity}** resin folding tables, 29 by 30 by 72 National Public Seating BT3072, 10 year warranty, or equal, shall be provided new and shall remain as OWNER's property.
 6. **{Insert quantity}** four drawer, legal size lateral filing cabinet. HON 500 series or equal. (Similar to Staples Item: 342892/Model: HON584L).
 7. **{Insert quantity}** four drawer, legal size lateral filing cabinet. HON 320 series or equal. (Similar to Staples Item: 904583/Model: HH324CPP).
 8. **{Insert quantity}** five (5) shelf storage/supply cabinet of approximately 78-inch high by 36-inch wide by 24-inch deep, furnished with locking doors, Sandusky or equal. (Similar to Staples Cat. # 880049/Model: SA4R362478-07).
 9. Provide and install **{insert quantity}** "Plan-Hold" wall-mounted 42-inch wide plan racks with 36 individual plan holders each.
 10. Provide and install **{insert quantity}** large white board in one conference room, 48 by 72 inches, Quartet melamine dry-erase board or equal. (Similar to Staples Cat. # 789834/Model: S538).
 11. Provide and install **{insert quantity}** large tack board in the other conference room, 48 by 72 inches, Quartet cork bulletin board or equal. (Similar to Staples Cat. # 789842/Model: QRT2308).
 12. Provide and install **{insert quantity}** combination tack/white boards, 36 by 48 inches, one in each office, Quartet or equal. (Similar to Staples Cat. # 518886/Model: S554).
- B. Unless otherwise noted in this Section, furniture shall remain property of CONTRACTOR. CONTRACTOR shall remove such property upon Substantial Completion of Work or as otherwise determined in writing by OWNER.

1.08 TELEPHONE & DATA AND TRANSMISSION LINES

- A. Provide LAN and phone connectivity to all equipment specified below from the point of connection (POC) to equipment, including, but not limited to all cabling, jacks, patch panel, and patch cables as required to connect all of the equipment listed in this section to the LAN. Cabling shall be CAT 6 or better.
- B. Provide **{Quantity}** separate phone lines, one dedicated fax line and **{Quantity}** phone instruments each with speakerphone, intercom, conference call, flash, redial, call hold and voice mail. Each phone instruments shall have a 4-line or more capacity/selectivity. Provide supporting terminal blocks and any required switch, router, power supplies, and amplifiers.
- C. Provide business class Broadband data service. Broadband data service is defined as a minimum of 25 Mbps download.
- D. Provide, install, and maintain the following specified equipment:
1. Cisco ISR 4331 capable of providing wireless Internet access. Smartnet will be provided for the entirety of the project to cover the networking equipment.
 2. Cisco Small Business unmanaged switch with enough capacity to provide a wired Ethernet connection to each device in the office capable of using one.
- E. Provide, install, configure and maintain **{Quantity}** laptop docking station.
- F. Printer/Copier/Scanner/Fax: Provide, install, configure and maintain for network connectivity one HP LaserJet MFP M880z+ (or latest HP equivalent model at time of bid) with the following features and accessories:
1. B/W and Color.
 2. Speed:
 - a. Copy: 46 ppm.
 - b. Scan: 70 ppm.
 - c. Print: 46 ppm.
 3. Network capable.
 4. Finisher with collation and one position stapling (minimum A2W80A HP LaserJet Stapler/Stacker).
 5. Three paper trays integral with the equipment including 8 ½ by 11, 8 ½ by 14 and 11 by 17.

6. Additional 3500 sheet paper feed pedestal or drawer.
 7. 2 GB Image Memory, 160 GB hard disk drive.
 8. 600 by 600 dpi.
 9. Zoom, Reduction and enlargement from 25 percent to 400 percent.
 10. Embedded Print Controller with minimum 166 Mhz processor and 10/100 BaseT Network Interface Card.
 11. 1Fax specifications: See standard for MFP model.
 12. Maintenance: CONTRACTOR shall repair and service machine as necessary. Repair calls shall be responded to within 24 hours of placement.
 13. Supplies: CONTRACTOR shall provide THE FOLLOWING:
 - a. All toner supplies and consumables, including enough supplies to maintain two spares of each color toner.
 - b. All staples and other printer-related consumables, including enough supplies to maintain one spare staple cartridge.
- G. CONTRACTOR shall be responsible for maintaining all transmission lines, equipment and related devices. If equipment and/or transmission equipment becomes inoperable and downtime exceeds two days, CONTRACTOR shall replace and/or provide equivalent interim equipment.
- H. CONTRACTOR shall employ an experienced and qualified MCSE certified Network Administrator, who shall be responsible to set up and service the LAN equipment and appurtenances provided in OWNER trailer, so as to maintain the equipment in continuous operation. Service response shall be within one day of incident.
- I. Electronic/office equipment shall be new at the commencement of the project.

1.09 TEMPORARY STORAGE UNITS

- A. CONTRACTOR shall provide secure and waterproof storage units for the temporary storage of furniture, equipment and other items requiring protection.
- B. Walls, roof and doors shall be a minimum of 16-gauge steel with floors of 1 inch tongue and groove hardwood or ¾ inch minimum exterior type plywood. The undercarriage shall be designed to accommodate forklift blades 42-inch to 60-inch

long. There shall be doublewide swing out lockable doors at one end equipped with waterproof gaskets.

- C. CONTRACTOR shall be responsible for delivery charges and will install the storage unit in an appropriate area.
- D. CONTRACTOR shall remove the storage unit from the Project site when the storage unit is no longer required for the Work or upon Substantial Completion of the Work.
- E. CONTRACTOR shall at their expense and without limitation remove and/ or relocate storage units as rapidly as required in order to provide for progress of the Work.

1.10 TEMPORARY SANITARY FACILITIES

- A. CONTRACTOR shall provide portable chemical toilet facilities. Quantity of portable chemical toilet facilities shall be based on total number of workers and shall be in accordance with CAL/OSHA standards.
- B. Portable chemical toilet facilities shall be maintained with adequate supplies and in a clean and sanitary condition and shall be removed from the Project site upon Substantial Completion of the Work. CONTRACTOR shall keep both OWNER chemical toilet facilities and OWNER trailer restroom clean and operational at all times.
- C. At CONTRACTOR'S expense and without limitation remove and/or relocate portable chemical toilet facilities as rapidly as required in order to provide for progress of the Work.
- D. CONTRACTOR will contain their breaks and lunch periods to the areas designated by OWNER or any public area outside the Project site. CONTRACTOR shall provide a suitable container within the break/lunch area for the placement of trash. Areas used for break/lunch must be maintained clean and orderly. Once finish flooring has been installed in a particular area, no food or beverages will be permitted in that area.

1.11 TEMPORARY SECURITY FENCE / BARRICADE

- A. CONTRACTOR shall install temporary Project site security barricade(s) indicated on Drawings or as required for safety and as specified herein. New or used material may be furnished. Security of Project site and contents is a continuous obligation of CONTRACTOR.

- B. Unless otherwise indicated or specified, security fence shall be constructed of 8-foot high chain link fencing with an 8-foot high windscreen. Space posts not to exceed ten feet on centers. Posts shall be of following nominal pipe dimensions: terminal, corner, and gatepost 2 ½-inch, line posts 2-inch. Chain link fence shall be not less than #13 gauge, 2-inch mesh, and in one width. Posts, fence and accessories shall be galvanized and as follows:
1. Shall be set in the earth a depth of 24-inch with soil firmly compacted around post, unless required otherwise in writing by OWNER.
 2. Fence fabric shall be attached to posts with #14 gauge tie wire at 16 inches on center. A #6 gauge steel tension wire with turnbuckles shall be installed at top and bottom of barricade fencing. Wire tie fabric to tension wires at 18" centers.
 3. Windscreen shall be attached to fence fabric and steel tension wires at 18-inch centers with a minimum of #14 gauge tie wire. Windscreen shall be maintained and all rips, tears, missing sections shall be corrected upon notification by OWNER.
 4. Chain link fencing shall be free from barbs, icicles or other projections resulting from galvanizing process. Fence having such defects will be replaced even if it has been installed.
 5. Gates shall be fabricated of steel pipe with welded corners, and bracing as required. Fence and fabric to be attached to frame at 12-inch centers. Provide all gate hardware of a strength and quality to perform satisfactorily until barricade is removed upon Substantial Completion of the Work. Each gate shall have a chain and padlock. Provide two gate keys to OWNER. At Substantial Completion of the Work, remove barricade from Project site, backfill and compact fence footing holes. Existing surface paving that is cut into or removed shall be patched and sealed to match surrounding areas.
 6. At CONTRACTOR'S expense and without limitation remove or relocate fencing, fabric and barricades or other security and protection facilities as rapidly as required in order to provide for progress of the Work.

1.12 OTHER TEMPORARY ENCLOSURE AND BARRICADES

- A. Provide lockable, temporary weather-tight enclosures at openings in exterior walls to create acceptable working conditions, to allow for temporary heating and for security.
- B. Provide protective barriers around trees, plants and other improvements designated to remain.

- C. Temporary partitions shall be installed at all openings where additions connect to existing buildings, and where to protect areas, spaces, property, personnel, students and faculty and to separate and control dust, debris, noise, access, sight, fire areas, safety and security. Temporary partitions shall be as designated on the Drawings or as specified by ARCHITECT. At CONTRACTOR'S expense and without limitation remove and/or relocate enclosures, barriers and temporary partitions as rapidly as required in order to provide for progress of the Work.
- D. Since the Work of this Project may be immediately adjacent to existing occupied structures and vehicular and pedestrian right of ways, CONTRACTOR shall, in his sole judgment and in accordance with applicable safety standards, provide temporary facilities, additional barricades, protection and care to protect existing structures, occupants, property, pedestrians and vehicular traffic. CONTRACTOR is responsible for any damage, which may occur to the property and occupants of the property of OWNER or adjacent private or public properties which in any way results from the acts or neglect of CONTRACTOR.
- E. CONTRACTOR shall be responsible for cleaning up all areas adjacent to the construction site which have been affected by the construction; and for restoring them to at least their original condition- including landscaping; planting of trees, sod, and shrubs damaged by construction; and raking and disposal of debris such as roofing shingles, paper, nails, glass sheet metal, bricks, and waste concrete. Construction debris shall be removed and properly disposed of. Culverts and drainage ditches with sediment from the construction area shall be cleared routinely to maintain proper drainage and re-cleaned prior to completion of the contract.
- F. CONTRACTOR shall ensure sediment does not block storm drains. CONTRACTOR shall be responsible for cleaning storm drains blocked due to erosion or sediment from the work area.

1.13 TEMPORARY STORAGE YARDS

- A. CONTRACTOR shall fence and maintain storage yards in an orderly manner.
- B. Provide storage units for materials that cannot be stored outside.
- C. At CONTRACTOR'S expense and without limitation remove and/or relocate storage yards and units as rapidly as required in order to provide for progress of the Work.

1.14 TEMPORARY DE-WATERING FACILITIES AND DRAINAGE

- A. For temporary drainage and de-watering facilities and operations not directly associated with construction activities included under individual sections, comply

with de-watering requirements of applicable Division 01 sections. CONTRACTOR shall maintain the Work, Project site and related areas free of water.

- B. For temporary drainage and de-watering facilities and operations directly associated with new buildings, additions or other construction activities, comply with Divisions 01 and 33 Sections. CONTRACTOR shall be responsible for, but not limited to, de-watering of excavations, trenches and below grade areas of buildings, structures, the Project site and related areas.

1.15 TEMPORARY PROTECTION FACILITIES INSTALLATION

- A. CONTRACTOR shall not change over from using temporary facilities and controls to permanent facilities until Substantial Completion, except as permitted by OWNER.
- B. Until permanent fire protection needs are supplied and approved by authorities having jurisdiction, CONTRACTOR shall provide, install and maintain temporary fire protection facilities of the types needed in order to adequately protect against fire loss. CONTRACTOR shall adequately supervise welding operations, combustion type temporary heating and similar sources of fire ignition.
- C. CONTRACTOR shall provide, install and maintain substantial temporary enclosures of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security. Where materials, tools and equipment are stored within the Work area, CONTRACTOR shall provide secure lock up to protect against vandalism, theft and similar violations of security. OWNER accepts no financial responsibility for loss, damage, vandalism or theft.
- D. CONTRACTOR operations shall not block, hinder, impede or otherwise inhibit the use of required exits and/or emergency exits to the public way, except as approved by OWNER. CONTRACTOR shall maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for firefighting equipment and/or personnel.
- E. With approval of OWNER and at the earliest feasible date in each area of the Work, complete installation of the permanent fire protection facilities including connected services and place into operation and use. Instruct OWNER personnel in use of permanent fire protection facilities.
- F. In the event of an emergency drill or an actual emergency, designated by the sounding of the fire alarm and/or other sounding device, all construction activities must cease. CONTRACTOR shall evacuate the Work area and remain outside the Work area until permitted to return. No Work shall be conducted during the evacuation of a building or during an emergency.

1.16 TEMPORARY SECURITY AND SAFETY MEASURES

- A. During performance of the Work in existing facilities and/or on a Project Site occupied by students, CONTRACTOR shall provide, install and maintain substantial temporary barriers and/or partitions separating all Work areas from areas occupied by students, faculty and/or administrative staff.
- B. During performance of the Work in existing facilities or on a Project site occupied by students and where temporary barriers or partitions are not physically feasible, CONTRACTOR shall provide an employee meeting the requirements of Education Code Section 45125.2.(2) to continually supervise and monitor all employees of CONTRACTOR and Subcontractor. For the purposes of this Section, CONTRACTOR employee shall be someone whom the Department of Justice has ascertained has not been convicted of a violent or serious felony as listed in Penal Code Section 667.5(c) and/or Penal Code Section 1192.7(c). To comply with this Section, CONTRACTOR shall have his employee submit his or her fingerprints to the Department of Justice pursuant to Education Code Section 45125.1(a).
- C. Penal Code Sections 290 and 290.4 commonly known as “Megan’s Law”, require, among other things, individuals convicted of sexually oriented crimes, to register with the chief of police where the convicted individual resides or with a county sheriff or other law enforcement officials. CONTRACTOR shall check its own employees and require each Subcontractor to check its employees and report to CONTRACTOR if any such employees are registered sex offenders. CONTRACTOR shall check monthly during the life of the Contract to ascertain this information and report same to OWNER. Before starting the Work, and monthly thereafter during the life of Contract, CONTRACTOR shall notify OWNER in writing if any of its employees and/or if any Subcontractor’s employees is a registered sex offender. If so, CONTRACTOR shall proceed in accordance with paragraph B above.
- D. CONTRACTOR shall employ and maintain sufficient security and safety measures to effectively prevent vandalism, vagrancy, theft, arson, and all other such negative impacts to the Work. Any impacts to the progress of the Work of CONTRACTOR, OWNER, or OWNER’S forces, due to loss from inadequate security, will be the responsibility of CONTRACTOR.
- E. Until Substantial Completion of the Work, CONTRACTOR shall employ appropriate means to remove all graffiti from buildings, equipment, fences and all other temporary and/or permanent improvements on the Project site within twenty-four (24) hours from the date of report or forty-eight (48) hours of each occurrence.

1.17 TEMPORARY ACCESS ROADS AND STAGING AREAS

- A. CONTRACTOR shall provide legal access to and maintain CONTRACTOR designated areas for the legal parking, loading, off-loading and delivery of all vehicles associated with the Work. CONTRACTOR shall be solely responsible for providing and maintaining these requirements whether on or off the Project site. CONTRACTOR shall provide and maintain ample on-site parking spaces designated for the exclusive use of OWNER. CONTRACTOR shall erect signs as required by OWNER each of these spaces and prevent all unauthorized vehicles from parking in the OWNER-reserved spaces.
- B. Temporary access roads are to be installed and maintained by CONTRACTOR to all areas of the Project site.
- C. CONTRACTOR will be permitted to utilize existing facility campus roads as designated by OWNER. CONTRACTOR shall only utilize those entrances and exits as designated by OWNER and CONTRACTOR shall observe all traffic regulations of OWNER.
- D. CONTRACTOR shall maintain roads and walkways in a clean condition including removal of debris and/or other deleterious material on a daily basis.

1.18 DIRECTIONAL SIGNAGE AND ADVERTISEMENT POSTING

- A. CONTRACTOR shall provide and install signage to provide directional, identification, and contact information to construction personnel and visitors as follows and as reviewed by OWNER.
 - 1. For construction traffic control/flow at entrances/exits, and as designated by OWNER.
 - 2. To direct visitors.
 - 3. For construction parking.
 - 4. To direct deliveries.
 - 5. For Warning Signs as required.
 - 6. In accordance with CAL/OSHA standards as necessary.
 - 7. For trailer identification and Project site address.
 - 8. For “No Smoking” safe work site at designated locations.
 - 9. Emergency contact information and phone number of CONTRACTOR.

10. Emergency contact information and phone number of local police, fire, and emergency personnel.
 11. For Labor Compliance Program (LCP) as required under the General Conditions (Prevailing wage rates and Notice of LCP)
 12. Employee benefits payments paid to trust funds are required under the General Conditions.
- B. OWNER has established a program authorizing vendors to post advertisements and billboards along the perimeter of project site. CONTRACTOR shall provide access and shall allow advertising signage to be placed on top of temporary, perimeter, security barricade and/or fences.

1.19 TRENCHES

- A. Open trenches for installation of utility lines (water, gas, electrical and similar utilities) and open pits outside barricaded working areas shall be barricaded at all times in a legal manner determined by CONTRACTOR. Trenches shall be backfilled and patch-paved within twenty-four (24) hours after approval of installation by authorities having jurisdiction or shall have "trench plates" installed. Required access to buildings shall be provided and maintained. CONTRACTOR shall comply with all applicable statutes, codes and regulations regarding trenching and trenching operations. Open trenches deeper than 3'-6", and not located within a public street access, shall be enclosed within an 8'-0" high chain-link fence.

1.20 DUST CONTROL

- A. CONTRACTOR is responsible for dust control on and off the Project site. When Work operations produce dust the Project site and/or streets shall be sprinkled with water to minimize the generation of dust. CONTRACTOR shall clean all soils and debris from construction vehicles and cover both earth and debris loads prior to leaving the Project site. CONTRACTOR shall, on a daily basis, clean all streets and/or public improvements within the right of way of any and all debris, dirt, mud and/or other materials attributable to operations of CONTRACTOR.

1.21 WASH OUT

- A. CONTRACTOR shall provide and maintain a minimum of four (4) wash out boxes of sufficient size and strength to provide for concrete mixer wash out. CONTRACTOR shall locate and relocate both the wash out boxes and wash out areas in order to accommodate the progression of the Work. The wash out area shall be located as to minimize the amount of potential run off onto adjacent private and/or public property. CONTRACTOR shall legally dispose of the contents of the wash out boxes and area on an as needed basis or as required.

1.22 WASTE DISPOSAL

- A. CONTRACTOR shall provide and maintain trash bins on the Project site. Trash bins shall be serviced on an as needed basis and CONTRACTOR is responsible for the transportation of and the legal disposal of all contents.

1.23 ADVERSE WEATHER CONDITIONS

- A. Should warnings of adverse weather conditions such as heavy rain and/or high winds be forecasted, CONTRACTOR shall provide every practical precaution to prevent damage to the Work, Project site and adjacent property. CONTRACTOR precautions shall include, but not be limited to, enclosing all openings, removing and/or securing loose materials, tools, equipment and scaffolding.
- B. CONTRACTOR shall provide and maintain drainage away from buildings and structures.
- C. CONTRACTOR shall implement all required storm water mitigation measures as required under related Division 01 Sections.

1.24 DAILY AND MONTHLY REPORTS

- A. CONTRACTOR shall provide and maintain in the Project site office of CONTRACTOR, a daily sign in sheet for use by all employees of CONTRACTOR and all Subcontractors at whatever tier. At the beginning of each work day, the foreman, project manager, superintendent of CONTRACTOR and/or Subcontractors shall visit the site office of CONTRACTOR and shall enter onto the daily sign in sheet: all employee names; trade classification; and represented company. The completed sign in sheet shall serve as the basis of and shall be submitted with the daily construction report as set forth in Paragraph B below.
- B. By the end of each workday, CONTRACTOR shall submit to OWNER a daily construction report denoting the daily manpower counts and a brief description/location of the workday activities. Manpower shall be broken down by trade classification such as foreman, journeyman or apprentice. The report shall also note the date, day of the week, weather conditions, deliveries, equipment on the Project site whether active and/or idle, visitors, inspections, accidents and unusual events, meetings, stoppages, losses, delays, shortages, strikes, orders and requests of governing agencies, Construction Directive and/or Change Orders received and implemented, services disconnected and/or connected, equipment start up or tests and partial use and/or occupancies. CONTRACTOR shall also include on the daily construction report the above information for all Subcontractors at whatever tier.

- C. CONTRACTOR shall submit on a monthly basis the forms found in Section 01 7416 certifying CEQA Mitigations and Storm Water Pollution Prevention (SWPP) compliances.

1.25 FIELD OFFICE SUPPLIES

- A. CONTRACTOR shall provide the initial supply of field office supplies to OWNER in the quantities listed as set forth below in Table A. If specified in Section 01 2100 – Allowances, CONTRACTOR shall provide additional supplies as required by OWNER. CONTRACTOR shall not deduct the costs of the Initial Field Office Supplies (as shown in Table A) from the Allowance for the monthly replenishment of OWNER field office supplies listed in Section 01 2100 – Allowances. CONTRACTOR shall deliver all of the initial field office supplies to OWNER Field Offices within fourteen days from the date established in the Notice to Proceed.
- B. CONTRACTOR may utilize different suppliers as the specified information is only to establish the required quantities and minimum levels of quality.
- C. Replenishment of Field Office Supplies: If an Allowance is identified in Section 01 2100 – Allowances for the periodic replenishment of OWNER field office supplies. OWNER shall submit requests for replenishment of field office supplies to CONTRACTOR from those listed in Table ‘A’ below. CONTRACTOR shall provide a monthly accounting of items being requested, cumulative cost of replenishment of Field Office supplies previously ordered, and balance of allowance remaining. Upon Substantial Completion of the Work, CONTRACTOR shall file a Change Order Proposal crediting OWNER for any remaining balance or unspent portion of the Allowance. This Allowance specifically excludes the initial supplies listed in Table ‘A’ below and is to be used exclusively for the monthly replenishment of OWNER field office supplies. Supplies are to be delivered to OWNER’S trailer within twenty-four hours of OWNER’S request.
- D. Postage and Delivery Costs: CONTRACTOR shall provide postage and delivery services for OWNER generated materials in quantities and/or frequencies as requested by OWNER. The cost for these services shall be deducted from the Allowance identified in Section 01 2100 – Allowances for the periodic replenishment of OWNER field office supplies. This allowance is for the OWNER’S use only. Postage and delivery costs for CONTRACTOR generated materials are the responsibility of the CONTRACTOR and shall not be charged to this allowance, regardless of whether the postage and/or delivery of CONTRACTOR generated materials resulted from a request and/or direction from OWNER.
- E. Other expendable field office support items specified elsewhere, including, but not limited to, furnishing toner cartridges, equipment maintenance, and bottled water,

are to be supplied and paid for by CONTRACTOR. These costs are not to be deducted from the Allowance for the periodic replenishment of OWNER field office supplies identified in Section 01 2100.

Table A				
ITEM	DESCRIPTION	UNIT	QUANTITY	SUPPLIER/ITEM NUMBER
Three Ring Binders – 3-inch	N/A	Each	{ SPECIFY }	Staples / 823526-54
Three Ring Binders – 2-inch	N/A	Each	{ SPECIFY }	Staples / 816199-54
Three Hole Punch	N/A	Each	{ SPECIFY }	Staples / 893844
Two Hole Punch	N/A	Each	{ SPECIFY }	Staples / 506261-54
File Organizer	N/A	Each	{ SPECIFY }	Staples / 120162-54
Calculator	Canon WS-1400H	Each	{ SPECIFY }	Staples / 342763
Flash Drive	2 GB	2	{ SPECIFY }	
Wastebasket	N/A	Each	{ SPECIFY }	Staples / 125039-54
Digital Camera	5 megapixel	Each	1	
Camera Flash Memory with reader for computer	5 GB	Each	1	
Camera Batteries and Rechargeable Batteries with charger	Appropriate to Camera	Each	1	
Cordless Phone with Answering Machine	AT&T Dect 6.0	Each	1	Staples / 1148831
Surge Suppressors	N/A	Each	{ SPECIFY }	Staples / IMIRA1696
Flashlight	N/A	Each	{ SPECIFY }	Staples / 222397
Batteries	N/A	4/Lot	{ SPECIFY }	Staples / 318956-54
Clipboard	N/A	3/Lot	{ SPECIFY }	Staples / 450422-54
8-inch Cast Iron Shears	N/A	Each	{ SPECIFY }	Staples / 421040-54
First Aid Kit	N/A	Each	1	Staples / 503979-54
Journal	N/A	Each	{ SPECIFY }	Staples / 217695-54
Pens (blue, green and red)	N/A	12/Lot	{ SPECIFY }	Staples / 441884-64
Pencils	N/A	48/Lot	{ SPECIFY }	Staples / 711382-54
Pencil Sharpener	1900	1	{ SPECIFY }	Staples / 330250-54
Mouse Pad	N/A	Each	{ SPECIFY }	Staples / 382955-64
Date Received Stamp	N/A	Each	1	Staples / 920274-54
Colored Pencils	N/A	12/Lot	{ SPECIFY }	Staples / 317297-54
Markers	N/A	12/Lot	{ SPECIFY }	Staples / 932675
Telephone Message Book	N/A	Each	{ SPECIFY }	Staples / 194506
Wall Calendar	PM233-28	Each	{ SPECIFY }	Staples / 527861-54
Steno Pad	N/A	12/Lot	{ SPECIFY }	Staples / 163485-64
Legal Pad	N/A	12/Lot	{ SPECIFY }	Staples / 163865-64
Post Its	N/A	12/Lot	{ SPECIFY }	Staples / 130005-64
File Folders – 8-1/2 by 11	N/A	50/Lot	{ SPECIFY }	Staples / 831099-54
File Folders – 8-1/2 by 14	N/A	50/Lot	{ SPECIFY }	Staples / 831057-54
Tape / Dispenser	N/A	Each	{ SPECIFY }	Staples / 211540-54
Highlighters	N/A	12/Lot	{ SPECIFY }	Staples / 167031
Rubber Bands	N/A	Each	{ SPECIFY }	Staples / 808634
Push Pins	N/A	Each	{ SPECIFY }	Staples / 480118-54
Dry Erase Board	S537	Each	{ SPECIFY }	Staples / 518928-54
Binder Clip – Medium	N/A	24/Lot	{ SPECIFY }	Staples / 831602-54
Binder Clip - Large	N/A	12/Lot	{ SPECIFY }	Staples / 831610-54
Stapler	818	Each	{ SPECIFY }	Staples / 504308

3 Pocket Wall File	N/A	Each	{ SPECIFY }	Staples / 730523-54
Heavy Duty Stapler	415	Each	1	Staples / 386312-54
Heavy Duty Staples	SW1-35312	Each	1	Staples / 504191-54
Hanging File Folder	8-1/2 x 11	25/Lot	{ SPECIFY }	Staples / 116806-54
Hanging File Folder	8-1/2x14	25/Lot	{ SPECIFY }	Staples / 163352-54
File Folder Labels	5266	750/Lot	{ SPECIFY }	Staples / 287292-54
Fax Notes	N/A	12/Lot	{ SPECIFY }	Staples / 210625-64
Paper Clips	N/A	Each	{ SPECIFY }	Staples / 480108-54
Paper Clips	N/A	Each	{ SPECIFY }	Staples / 480109-54
Poster Kit - State	CA	Each	1	Staples / 1183148
Poster Kit - Federal	US	Each	1	Staples / 935983-54
Broom	N/A	Each	1	Staples / 256600
Fire Extinguisher	First Alert	Each	{ SPECIFY }	Staples / 238774-54
Copy Paper	8-1/2 x 11	5000/Case	{ SPECIFY }	Staples / 122374-69
Copy Paper	8-1/2 x 14	500/Ream	{ SPECIFY }	Staples / 122598-69
Copy Paper	11 x 17	500/Ream	{ SPECIFY }	Staples / 238105-69
Hardhats	White	Each	{ SPECIFY }	Fiber Metal Model E-2 Ratchet knob full range size adjustment
Safety Glasses	Clear and/or Tinted	Each	{ SPECIFY }	Crews Storm Series
Safety Vests, Zipper Front	Hi Vis Lime Yellow	Each	{ SPECIFY }	Aramak Wearguard Item DEF-1085

PART 2 – PRODUCTS – Not Used

PART 3 – EXUTION – Not Used

END OF SECTION

SECTION 01 5719
CEQA MITIGATIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Mitigation procedures to minimize environmental impact.

1.02 RELATED SECTIONS

- A. Section 01 3546 – Indoor Air Quality Procedures.
- B. Section 01 3591 – Historic Treatment Procedures.
- C. Section 01 3592 – Mitigation and Monitoring Procedures for Archaeological and Historical Findings.
- D. Section 01 7416 – Storm Water Pollution Prevention Plan.
- E. Section 01 4524 – Environmental Import / Export Materials Testing.
- F. Section 01 5000 - Construction Facilities and Temporary Controls.
- G. Section 01 7419 - Construction Demolition and Waste Management.

1.03 SUBMITTALS

- A. CONTRACTOR shall submit on a monthly basis the Certification of Compliance with CEQA Mitigations.

1.04 CEQA MITIGATIONS

- A. SC-AE-7: Following installation of exterior lighting CONTRACTOR shall adjust light fixtures to reduce the lighting intensity from the new sources on adjacent residences to no more than two foot-candles, measured at the property line.
- B. SC-AQ.2: CONTRACTOR shall ensure that construction equipment is properly tuned and maintained in accordance with manufacturer’s specifications, to ensure that excessive emissions are not generated by unmaintained equipment.
- C. SC-AQ.3: CONTRACTOR shall comply with the following requirements:
 - 1. Maintain slow speeds with all vehicles.
 - 2. Load impacted soil directly into transportation trucks to minimize soil handling.
 - 3. Water/mist soil as it is being excavated and loaded onto the transportation trucks.

4. Water/mist and/or apply surfactants to soil placed in transportation trucks prior to exiting the site.
 5. Minimize soil drop height into transportation trucks or stockpiles during dumping.
 6. During transport, cover or enclose trucks transporting soils, increase freeboard requirements, and repair trucks exhibiting spillage due to leaks.
 7. Cover the bottom of the excavated area with polyethylene sheeting when work is not being performed.
 8. Place stockpiled soil on polyethylene sheeting and cover with similar material.
 9. Place stockpiled soil in areas shielded from prevailing winds.
- D. SC-AQ.4: When using large, heavy or noisy construction equipment CONTRACTOR shall implement all feasible measures to reduce air emissions below the South Coast Air Quality Management District's (SCAQMD) regional and localized significance thresholds
1. Exhaust Emissions:
 - a. Schedule construction activities that affect traffic flow to off-peak hours (e.g. between 10:00 AM and 3:00 PM).
 - b. Consolidate truck deliveries and/or limit the number of haul trips per day.
 - c. Route construction trucks off congested streets.
 - d. Employ high pressure fuel injection systems or engine timing retardation.
 - e. Utilize ultra-low sulfur diesel fuel, containing 15 ppm sulfur or less (ULSD) in all diesel construction equipment.
 - f. Use construction equipment rated by the United States Environmental Protection Agency as having Tier 3 (model year 2006 or newer) or Tier 4 (model year 2008 or newer) emission limits for engines between 50 and 750 horsepower.
 - g. Restrict non-essential diesel engine idle time, to not more than five consecutive minutes.
 - h. Utilize electrical power rather than internal combustion engine power generators as soon as feasible during construction.
 - i. Utilize electric or alternatively fueled equipment, if feasible.
 - j. Utilize construction equipment with the minimum practical engine size.
 - k. Utilize low-emission on-road construction fleet vehicles.

1. Ensure construction equipment is properly serviced and maintained to the manufacturer's standards.
2. Fugitive Dust:
 - a. Apply non-toxic soil stabilizers according to manufacturers' specification to all inactive construction areas (previously graded areas inactive for ten days or more).
 - b. Replace ground cover in disturbed areas as quickly as possible.
 - c. Sweep streets at the end of the day if visible soil material is carried onto adjacent public paved roads (recommend water sweepers with reclaimed water).
 - d. Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.
 - e. Pave construction roads that have a traffic volume of more than 50 daily trips by construction equipment, and/or 150 daily trips for all vehicles.
 - f. Pave all construction access roads for at least 100 feet from the main road to the project site.
 - g. Water the disturbed areas of the active construction site at least three times per day, except during periods of rainfall.
 - h. Enclose, cover, water twice daily, or apply non-toxic soil binders according to manufacturers' specifications to exposed piles (i.e., gravel, dirt, and sand) with a five percent or greater silt content.
 - i. Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour (mph).
 - j. Apply water at least three times daily, except during periods of rainfall, to all unpaved road surfaces.
 - k. Limit traffic speeds on unpaved road to 15 mph or less.
 - l. Prohibit high emission causing fugitive dust activities on days where violations of the ambient air quality standard have been forecast by SCAQMD.
 - m. Tarp and/or maintain a minimum of 24 inches of freeboard on trucks hauling dirt, sand, soil, or other loose materials.
 - n. Limit the amount of daily soil and/or demolition debris loaded and hauled per day.
3. General Construction:
 - a. Utilize ultra-low VOC or zero-VOC surface coatings.

- b. Phase construction activities to minimize maximum daily emissions.
 - c. Configure construction parking to minimize traffic interference.
 - d. Provide temporary traffic control during construction activities to improve traffic flow (e.g., flag person).
 - e. Develop a trip reduction plan for construction employees.
 - f. Implement a shuttle service to and from retail services and food establishments during lunch hours.
 - g. Increase distance between emission sources to reduce near-field emission impacts.
 - h. Require construction contractors to document compliance with the identified mitigation measures.
- E. SC-N-5: CONTRACTOR shall consult and coordinate with the OWNER prior to construction to schedule high noise or vibration producing activities to minimize disruption. Coordination shall continue on an as-needed basis throughout the construction phase of the project to reduce noise sensitive land use disruptions.
- F. SC-N-6: CONTRACTOR shall minimize blasting for all construction and demolition activities, where feasible. If demolition is necessary adjacent to residential uses or fragile structures, the OWNER will require the CONTRACTOR to avoid using impact tools. Alternatives that shall be considered include mechanical methods using hydraulic crushers or deconstruction techniques.
- G. SC-N-7: Where pile driving activities are required within 150 feet of a structure, a detailed vibration assessment shall be provided by an acoustical engineer to analyze potential impacts related to vibration to nearby structures and to determine feasible mitigation measures to eliminate potential risk of architectural damage.
- H. SC-N-9: Specific noise reduction measures include, but are not limited to, those listed below.
- 1. Source Controls:
 - a. Time Constraints: It is prohibited work during nighttime hours.
 - b. Scheduling: Perform noisy work during less sensitive time periods (on operating campus: delay the loudest noise generation until class instruction at the nearest classrooms has ended; residential: only between 7:00 AM and 7:00 PM).
 - c. Equipment Restrictions: Restrict the type of equipment used.
 - d. Noise Restrictions: Specifying stringent noise limits.
 - e. Substitute Methods: Use quieter methods and/or equipment.
 - f. Exhaust Mufflers: Ensure equipment have quality mufflers installed.

- g. Lubrication & Maintenance: Well-maintained equipment is quieter.
 - h. Reduced Power Operation: Use only necessary size and power.
 - i. Limit Equipment On-Site: Only have necessary equipment on-site.
 - j. Noise Compliance Monitoring: Technician on site shall ensure compliance.
 - k. Quieter Backup Alarms: Manually-adjustable or ambient sensitive types.
2. Path Controls:
- a. Noise Barriers: Semi-permanent or portable wooden or concrete barriers.
 - b. Noise Curtains: Flexible intervening curtain systems hung from supports.
 - c. Enclosures: Encase localized and stationary noise sources.
 - d. Increased Distance: Perform noisy activities farther away from receptors, including operation of portable equipment, storage and maintenance of equipment.
3. Receptor Controls:
- a. Window Treatments: Reinforce the building's noise reduction capability.
 - b. Community Participation – open dialog to involve affected residents
 - c. Noise Complaint Process: CONTRACTOR shall log and respond to noise complaints. Advance notice of the start of construction shall be delivered to all noise sensitive receptors adjacent to the project area. The notice shall state specifically where and when construction activities will occur, and provide contact information for filing noise complaints with the CONTRACTOR and the OWNER. In the event of noise complaints, the OWNER will monitor noise from the construction activity to ensure that construction noise does not exceed limits specified in the noise ordinance.
 - d. Temporary Relocation: In extreme otherwise un-mitigatable cases, temporarily move residents or students to facilities away from the construction activity.
- I. SC-T-4: Construction Equipment for Use on Public Roadways: CONTRACTOR shall submit a construction worksite traffic control plan to the LADOT for review prior to construction. The plan shall show the location of haul routes, hours of operation, protective devices, warning signs, and access to abutting properties OWNER encourages CONTRACTOR to limit construction-related trucks to off-peak commute periods. As required by Caltrans, applicable transportation related

170418

safety measures shall be implemented during construction.

PART 2 – PRODUCTS – Not Used

PART 3 – EXECUTION – Not Used

END OF SECTION

SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section includes administrative and procedural requirements governing selection of products for incorporation into the Work.

1.02 RELATED REQUIREMENTS

- B. Section 01 3113 - Project Coordination.
- C. Section 01 3300 - Submittal Procedures.
- D. Section 01 3213 - Construction Schedule.
- E. Section 01 4523 - Testing and Inspection.
- F. Section 01 2513 - Product Substitution Procedures.
- G. Section 01 7836 - Warranties.

1.03 DEFINITIONS

- A. Definitions used in this Section are not intended to change the meaning of other terms used in the Contract Documents, such as “specialties,” “systems,” “structure,” “finishes,” “accessories,” and other similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
 - 1. “Products” are items purchased for incorporation into the Work, whether purchased for the Work or taken from previously purchased stock. The term “product” includes the terms “material” and “equipment” and terms of similar intent.
 - a. “Named Products,” are items identified by the manufacturer’s product name, including make, model number or other designation, shown or listed in the manufacturer’s published product literature, current as of the date of the Contract.
 - b. “Foreign Products,” as distinguished from “domestic products,” are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by

persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials," are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
3. "Equipment," is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.04 SUBMITTALS

- A. Material list: Prepare a list in tabular form acceptable to ARCHITECT and/or OWNER showing proposed products. Include generic names. Include the manufacturer's name and proprietary names for each item listed.
 1. Coordinate material list with the Construction Schedule and the submittal schedule.
 2. Form: Prepare material list with information on each item tabulated under the following column headings.
 - a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number, and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 3. Initial Submittal: Within ten days after execution of each subcontract agreement, as set forth in General Conditions, submit three copies of an initial material list to the ARCHITECT with a copy to the OWNER. Provide a written explanation for omissions of data and for known variations from the Contract Documents.
 4. ARCHITECT Action: ARCHITECT will respond in writing within fourteen days of receipt of the completed material list. No response outside this period constitutes no objection to listed items but does not constitute a waiver of the requirement that selected items comply with the Contract

Documents. ARCHITECT response will include a list of unacceptable item selections, containing a brief explanation of reasons for this action.

1.05 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
1. CONTRACTOR is to verify necessary lead times for all materials; however, when specified products are available only from sources that do not, or cannot, produce a quality adequate to complete Work in a timely manner, consult with the ARCHITECT to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing these qualities, to the fullest extent possible.
- B. Compatibility of Options: When the CONTRACTOR is given the option of selecting between two or more products for use in the Work, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion into the Work:
1. No available domestic product complies with the Contract Documents.
 2. Domestic products that comply with the Contract Documents are available only at prices or terms substantially higher than foreign products that comply with the Contract Documents.
- D. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturers or producer's nameplates or trademarks on exposed surfaces of products that will be exposed in view in occupied spaces or on the exterior.
1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.

- b. Model and serial number.
- c. Capacity.
- d. Speed.
- e. Ratings.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
 - 1. Schedule delivery to minimize long-term storage at the Project site and to prevent overcrowding of Work spaces.
 - 2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to the Project site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 - 5. Store products at the Project site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 - 6. Store heavy materials away from structures in a manner that will not endanger the structure's supporting construction.
 - 7. Store products subject to damage by the elements above ground, under cover in a weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIAL SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other Projects.
- B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:
1. Proprietary Specification Requirements: Where Specifications name only a single material or manufacturer, provide the product indicated. No substitutions will be permitted.
 2. Semi-proprietary Specification Requirements: Where Specifications name two or more products or manufacturers, provide one of the products indicated. No substitutions will be permitted.
 - a. Where Specifications specify products or manufacturers by name, accompanied by the term “or equal” comply with General Conditions to obtain approval for use of an unnamed product.
 3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, list exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with the Contract Documents.
 4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.
 - a. Manufacturer’s recommendations may be contained in published material literature or by the manufacturer’s certification of performance.
 5. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes, or regulations specified.

6. Visual Matching: Where Specifications require matching an established Sample, decision of the ARCHITECT will be final on whether a proposed product matches satisfactorily.
7. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard or premium colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The ARCHITECT will select the color, pattern, and texture from the product line selected.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located, and aligned with other Work.
- B. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.

END OF SECTION

SECTION 01 7123
FIELD ENGINEERING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Layout of the work
2. Verification of work
 - a. OWNER reserves the right to verify any work.
 - b. Other sections that require Surveyor to verify or measure installed work and related item. Surveyor shall perform such verifications or measurements at CONTRACTOR'S expense. CONTRACTOR shall furnish a certification, signed by both Surveyor and CONTRACTOR, to OWNER.

B. Related Requirements:

1. Section 01 1100 - Summary of Work.
2. Section 01 3113 - Project Coordination.
3. Section 01 3213 - Construction Schedule.
4. Section 01 3300 - Submittal Procedures.
5. Section 01 7700 - Contract Closeout.

1.02 SURVEY CONTROLS

- A. Vertical Control shall use same benchmark used in the preparation of topographic survey. When Work consists of both on-site and off-site and benchmarks differ, an equation shall be indicated on Drawings.
- B. Horizontal control for existing structures shall be the property line.

1.03 LAYOUT OF WORK

- A. All work related to staking shall be by a Land Surveyor, or Civil engineer, registered with the State of California to perform land surveying and employed by CONTRACTOR.

- B. Before commencement of Work, surveyor shall locate all reference points and benchmarks to be used for vertical and horizontal control.
- C. Surveyor shall lay out entire Work, set grades, lines, levels, control points, elevations, grids and positions.

1.04 RECORD DOCUMENTS

- A. Maintain complete and accurate log of all control and survey documentation as work progresses.
- B. Record, by coordinates, all utilities onsite with top of pipe elevations, at major grade and alignment changes, rim, grate or top of curb and flow line elevations of all drainage structures and sewer manholes.
- C. Indicate reference and control points on record drawings. The basis of elevation shall be one of the established benchmarks.
- D. Upon Substantial Completion, obtain and pay for reproducible plans. Deliver plans to OWNER. Clearly indicate all differences between original drawings and completed work within specified tolerances.

1.05 SUBMITTALS

- A. Surveyor: Shall submit name, address and license number to OWNER, including any changes as they occur.
- B. Field notes: Upon request by OWNER, submit copies of cut sheets, coordinate plots, data collector printouts, marked-up construction staking plans and other documentation as available to verify accuracy of field engineering work during and at completion of project. Submittals to OWNER must be signed and sealed by Surveyor and counter-signed by CONTRACTOR
- C. Statement of Compliance: CONTRACTOR shall submit a statement of certification signed and sealed by Surveyor, counter-signed by CONTRACTOR indicating compliance with grades and alignment of construction plans at rough grade, fine grade and top of rock stages. OWNER shall approve survey submittals for each stage of construction prior to proceeding with work
- D. Upon Substantial Completion, CONTRACTOR shall obtain and pay for reproducible survey drawings (or "As Built").
- E. Completed record drawings shall be signed and certified as correct and within specified tolerances by licensed surveyor. Originals and two sets of blueprints shall be submitted to OWNER.

PART 2-PRODUCTS – NOT USED

PART 3-EXECUTION

3.01 PREPARATION

- A. Pre-mark areas of excavation in accordance with the requirements of “Dig-Alert”. Request locators 2 days before commencing excavation.
- B. Before commencing Work, establish all horizontal and vertical reference points used in Contract Documents according to existing field conditions.
- C. Preserve established reference lines and benchmarks.
- D. Differentiate school and city datum as applicable.
- E. Relocate bench marks that may interfere with Work.
- F. Reset and re-establish reference marks damaged or lost during construction.

3.02 SURVEY REQUIREMENTS GENERAL

- A. Establish a minimum of two permanent horizontal and vertical control points on Project site, remote from construction area, referenced to data established by control points.
- B. Indicate reference points, relative to benchmark elevation, on record drawings.
- C. Provide grade stakes and elevations to construct over excavation and re-compaction, rough and final grades, paved areas, curbs, gutters, sidewalks, building pads, landscaped areas, and other areas as required.
- D. Calculate and layout proposed finished elevations and intermediate controls as required to provide smooth transitions between spot elevations indicated on Drawings.
- E. Provide stakes and elevations for grading, fill, and topsoil placement.
- F. Provide adequate horizontal and vertical control to locate utility lines, including but not limited to, storm, sewers, water mains, gas, electric and signal and provide vertical control in proportion to the slope of the line as required for accurate construction. Dry utilities will be based upon adequate horizontal and vertical control layout. Prior to trench closure, survey and record invert and flow line elevations. Survey and record top of curb and flow line elevations on finished concrete or asphaltic concrete (AC) surfaces at key locations such as beginning-of-curve (BC), end-of-curve (EC), grade breaks, corners or angle points in sufficient number to demonstrate the Work complies with the intent of the Contract Documents.

- G. Provide horizontal and vertical control for batter boards for drainage, utility, and other on-site structures as required.
- H. Furnish building corner offsets as required to adequately locate building pads. Provide cut and fill stakes within the building pad perimeter adequate to control both over excavation and re-compaction and the final sub-grade elevation of the building pad.
- I. Submit a certification signed by the surveyor confirming the elevations and locations of improvements are in conformance with the Contract Documents. The statement shall include survey notes for the finish floor and building pad, showing the actual measured elevations on the completed sub-grade, recorded to the nearest 0.01 of a foot. Building pad tolerance will be plus or minus 0.1 of a foot.
- J. Establish a minimum of two permanent horizontal and vertical control points on Project site, remote from building area, referenced to data established by survey control points.
- K. Mark boundaries for rights-of-way dedications and easements for utilities prior to making location of buildings and utilities.
- L. Layout all lines, elevations and measurements needed for construction or installation of buildings, grading, paving utilities according to the following:
 - 1. Identify site boundary, property lines.
 - 2. Provide working benchmarks.
 - 3. Set stakes for Bottom of Excavated Plane (B.E.P.).
 - 4. Set gridlines, radii, working points etcetera, for foundation.
 - 5. Set and verify building pad elevations.
 - 6. Set finish floor elevations.
 - 7. Stake location and elevations for exterior ramps and stairs.
 - 8. Set gridlines, radii, working points, etcetera, for all floors of multi-story buildings.
 - 9. Set storm drain and sanitary sewer inverts and other utilities as needed at 5-foot off-set from building lines.

3.03 SURVEY REQUIREMENTS FOR GRADING

- A. Provide grade stakes and elevations as follows:

1. Removal limits (cut lines).
 2. Rough grade staking: 60-foot maximum grid plus additional stakes at grade changes and pertinent locations. Flag all grade changes including ridges, flow lines and grade breaks.
 3. Fine grade for top of dirt: 30-foot maximum grid plus additional stakes at grade changes and pertinent locations. Flag all grade changes including ridges, flow lines and grade breaks.
 4. Verify fine grade for top of rock: 30-foot maximum grid plus additional stakes at grade changes and pertinent locations. Flag all grade changes including ridges, flow lines and grade breaks.
 5. Finish grade marks on all buildings, structures and at pertinent locations
 6. Finish grades and offsets for all concrete work, utilities, landscape areas, and structures.
 7. Provide controls and baselines for playground striping.
 8. Offsite improvements: set grades and provide grade sheets as required by local authorities.
- B. Provide a minimum of two permanent horizontal and vertical control points onsite, remote from building area, referenced to data established by survey control points.

3.04 SURVEY REQUIREMENTS FOR UTILITIES

- A. Locate “wet” utility lines and provide vertical control proportionate to slope of line as required for accurate construction. “Dry” utilities shall have adequate horizontal and vertical control layout supplied by others.
- B. Prior to back-filling trench, survey and record invert and flow line elevations. Survey and record top of curb and flow line elevations on finished surfaces at key locations (such as Back of Curbs, grade breaks, corners or angle points) in sufficient number to demonstrate Work complies with intent of Contract Documents.
- C. Provide horizontal and vertical control for batter boards for drainage, utility, and other on-site structures as required.
 1. Set grades for vaults one inch higher than adjacent surrounding design grades, unless noted otherwise.
- D. Leave all trenches open until required inspection is completed.

3.05 SURVEY REQUIREMENTS FOR STRUCTURES

- A. Furnish building corner offsets as required to adequately locate building pads. Provide cut and fill stakes within building pad perimeter adequate to control both over excavation and re-compaction and final sub-grade elevation of building pad.
- B. Submit a certification signed by surveyor confirming elevations and locations of improvements are in conformance with Contract Documents. Statement shall include survey notes for finish floor and building pad, showing actual measured elevations on completed sub-grade, recorded to nearest 0.01 of a foot. Building pad tolerance will be plus or minus 0.1 of a foot.

END OF SECTION

SECTION 01 7329
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section specifies procedural requirements for cutting and patching.

1.02 RELATED REQUIREMENTS

- A. Section 01 2973 - Schedule of Values.
- B. Section 01 3113 - Project Coordination.
- C. Section 01 3119 - Project Meetings.
- D. Section 01 3213 - Construction Schedule.
- E. Section 01 3300 - Submittal Procedures.
- F. Section 01 7123 - Field Engineering.
- G. Section 01 7836 - Warranties.
- H. Section 01 4525 - Testing, Adjusting, and Balancing of HVAC.

1.03 SUBMITTALS

- A. The word “cutting” as used in the Contract Documents includes, but is not limited to, cutting, drilling, chopping, and other similar operations and the word “patching” includes, but is not limited to, patching, rebuilding, reinforcing, repairing, refurbishing, restoring, replacing, or other similar operations.
- B. Cutting and Patching Proposal: CONTRACTOR shall submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Contract Documents requires approval of these procedures before proceeding. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required. Denote how it will be performed and indicate why it cannot be avoided.

2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building's appearance or other significant visual elements.
3. List products to be used and firms or entities that will perform this Work.
4. Indicate dates when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching operations will disturb or affect. List utilities to be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
7. Review by ARCHITECT prior to proceeding with cutting and patching does not waive ARCHITECT right to later require complete removal and replacement of defective Work.

1.04 QUALITY ASSURANCE

- A. Requirements for structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
 1. Obtain approval from ARCHITECT of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural concrete.
 - d. Structural steel.
 - e. Lintels.
 - f. Timber and primary wood framing.
 - g. Structural decking.
 - h. Stair systems.
 - i. Miscellaneous structural metals.
 - j. Exterior curtain-wall construction.

- k. Equipment supports.
 - l. Piping, ductwork, vessels, and equipment.
 - m. Structural systems of special construction in Division 13 Sections.
- B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.
- 1. Obtain review of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Primary operational systems and equipment.
 - b. Air or smoke barriers.
 - c. Water, moisture, or vapor barriers.
 - d. Membranes and flashings.
 - e. Fire protection systems.
 - f. Noise and vibration control elements and systems.
 - g. Control systems.
 - h. Communication and/or data systems.
 - i. Conveying systems.
 - j. Electrical wiring systems.
 - k. Operating systems of special construction in Division 13 Sections.
- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the opinion of ARCHITECT, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.
- 1. If possible, retain the original installer or fabricator to cut and patch the exposed Work listed below. If it is impossible to engage the original installer or fabricator, engage another recognized experienced and specialized firm.

- a. Firestopping.
- b. Acoustical ceilings.
- c. Acoustical panels.
- d. Finished wood flooring.
- e. Synthetic sports flooring.
- f. Carpeting.
- g. HVAC enclosures, cabinets, or covers.
- h. Ceramic and quarry tile.
- i. Gypsum board.
- j. Masonry (exterior and interior where exposed).
- k. Tack boards.
- l. Casework.
- m. Finish carpentry.

1.05 WARRANTY

- A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
 - 1. Before proceeding, meet at the Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 PREPARATION

- A. Temporary support: Provide adequate temporary support of existing improvements or Work to be cut.
- B. Protection: Protect existing improvements and Work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of existing improvements or Work that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Where the Work requires sandblasting of existing surfaces in order to receive new materials secured by cementitious, adhesive or chemical bond, completely remove existing finishes, stains, oil, grease, bitumen, mastic and adhesives or other substances deleterious to the new bonding or fastening of new Work. Utilize wet sand blasting for interior surfaces and for exterior surfaces where necessary to prevent objectionable production of dust.

3.03 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay. Carefully remove existing Work to be salvaged and/or reinstalled. Protect and store for reuse into the Work. Verify compatibility and suitability of existing substrates before starting the Work.
- B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining Work. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.
 - 1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill. Saw cut reinforcing bars and paint ends with bituminous paint except where bonded into new concrete or masonry.

4. Comply with requirements of applicable Sections of Divisions 31, 32, and 33 where cutting and patching requires excavating, backfill, and recompaction.
 5. Woodwork: Cut and or remove to a panel or joint line.
 6. Sheet Metal: Remove back to joint, lap, or connection. Secure loose or unfastened ends or edges and seal watertight.
 7. Glass: Remove cracked, broken, or damaged glass and clean rebates and stops of setting materials.
 8. Plaster: Cut back to sound plaster on straight lines, and back bevel edges of remaining plaster. Trim existing lath and prepare for new lath.
 9. Gypsum Wallboard: Cut back on straight lines to undamaged surfaces with at least two opposite cut edges centered on supports.
 10. Acoustical ceilings: Remove hanger wires and related appurtenances where ceilings are not scheduled to be installed.
 11. Tile: Cut back to sound tile and backing on joint lines.
 12. Flooring: Completely remove flooring and clean backing of prior adhesive. Carefully remove wood flooring for patching and repairing of existing wood flooring scheduled to remain.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with required tolerances.
1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation. Verify conditions of existing substrates prior to executing Work.
 2. Restore exposed finishes of patched areas and extend finish restoration into retaining adjoining construction in a manner that will eliminate all evidence of patching and refinishing.
 3. Concrete: Maintain cut edges in a moist condition for twenty four hours prior to the placement of new concrete. In lieu of this an epoxy adhesive may be provided. Finish placed concrete to match existing unless noted otherwise. Concrete shall have a compressive strength of 3,000 psi where installed to repair and match existing improvements, unless noted otherwise.
 4. Metal Fabrications: Items to remain exposed shall have their edges cut and ground smooth and rounded.

5. Sheet Metal: Replace removed or damaged sheet metal items for new Work.
6. Glass: Install matching glass and re-seal exterior window assemblies.
7. Lath and Plaster: Install new lath materials to match existing and fasten to supports at 6-inch centers. Provide a 6-inch lap where new lath to adjoins existing lath. Fasten new lath as required for new Work. Restore paper backings as required. Apply a bonding agent on cut edges of existing plaster. Apply three coat plaster of the type, thickness, finish, texture, and color to match existing.
8. Gypsum Wallboard: Fasten cut edges of wallboard. Install patches with at least two opposite edges centered on supports and secure at 6-inch centers. Tape and finish joints and fastener heads. Patching shall be non-apparent when painted or finished.
9. Acoustical Ceilings: Comply with the requirements for new Work specified in related sections of the Contract Documents.
10. Resilient Flooring: Completely remove flooring and prepare substrate for new material.
11. Painting: Prepare areas to be patched, patch and paint as specified under related sections of the Contract Documents.

3.04 CLEANING

- A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged coverings to their original condition.

END OF SECTION

SECTION 01 7416
 STORM WATER POLLUTION PREVENTION PLAN
 (FOR SITES WITH LAND DISTURBANCE OF ONE ACRE OR MORE)

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Storm water permitting and certification in compliance with state and local regulations, including payment of application and annual fees and electronic filing, through SMARTS website.
2. Preparation, implementation, upkeep and monitoring of Storm Water Pollution Prevention Plan (SWPPP).
3. Control runoff and pollutants from the site during construction activities.

B. Related Requirements:

1. Division 01 – General Requirements.
2. Section 32 1343 – Pervious Concrete Pavement.
3. Section 32 1415 – Permeable Interlocking Concrete Pavers.
4. Section 33 4000 – Storm Drainage Utilities.

1.02 ACRONYMS AND DEFINITIONS

BMP	Best Management Practice.
CAN	Corrective Action Notice.
CASQA	California Stormwater Quality Association.
COI	Change of Information.
DWQ	Division of Water Quality.
CGP	NPDES General Permit for Storm Water Discharges Associated with Construction Activities.
ELAP	Environmental Laboratory Accreditation Program.
LARWQCB	Los Angeles Regional Water Quality Control Board.
LRP	Legally Responsible Person (OWNER).
NOI	Notice of Intent.
NOT	Notice of Termination.

NPDES	National Pollutant Discharge Elimination System.
PRDs	Permit Registration Documents, including NOI, Risk Assessment, Site Map, SWPPP, Annual Fee, Signed Certification Statements.
REAP	Rain Event Action Plan.
RISK LEVEL	As defined by CGP.
QSD	Qualified SWPPP Developer.
QSP	Qualified SWPPP Practitioner.
QRE	Qualifying Rain Event, is an event that produces 0.5 inches of precipitation with a 48 hour or more period between rain events.
SMARTS	Storm Water Multiple Application and Report Tracking System (smarts.waterboard.ca.gov).
SWPPP	Storm Water Pollution Prevention Plan.
SWRCB	State Water Resources Control Board.
WPCD	Water Pollution Control Drawings.
WDID	Waste Discharge Identification Number.

1.03 SWPPP REQUIREMENTS

- A. CONTRACTOR shall assign a QSD and QSP, who shall be in responsible charge of Work of this Section.
- B. Prior to start of Construction, CONTRACTOR shall:
 - 1. Submit QSD and QSP qualifications.
 - 2. Incorporate SWPPP activities into the Project Schedule.
 - 3. Develop new SWPPP or update SWPPP provided by ARCHITECT to reflect CONTRACTOR's proposed construction staging, phasing, schedule and other construction activities. SWPPP shall be certified by QSD.
 - 4. Complete the following on the SMARTS website under project application started by OWNER LRP. CONTRACTOR shall provide SMARTS user name to LRP in order to be linked to the application.
 - a. NOI forms.
 - b. Upload SWPPP certified by QSD.
 - c. Risk Level Calculation.
 - d. Post Construction Water Balance Calculation provided by ARCHITECT (Attachment "B" Section 33 4000).

5. Inform LRP to review and certify the NOI application and PRDs on SMARTS at least 10 days prior to soils disturbance.
6. Submit NOI fee statement along with payment to SWRCB at least 7 days prior to start of construction to obtain a WDID number.
7. Secure and pay for deposits, permits and inspection fees to _____.
8. Inform CONTRACTOR and Subcontractors personnel on the BMP procedures to prevent pollutants from entering the storm drain system, before they start construction activities.

C. During Construction:

1. Implement, install and maintain BMPs. Insure that BMPs are designed to protect all exposed portions of the site.
2. Retain copy of the SWPPP, monitoring records, and PRD on site until Substantial Completion.
3. Conduct and document storm water pollution prevention training of CONTRACTOR site personnel and provide records of training to OWNER.
4. Monitor the Project Site per the CGP requirements.
 - a. Conduct site inspection of pollution prevention controls and provide Site Monitoring Reports per the CGP and SWPPP. Prepare and maintain, at the Project site, a log of each inspection using Site Monitoring Report forms (Attachment "A", at the end of this Section. Inspections shall include, at a minimum:
 - 1) At least weekly.
 - 2) Within 48 hours prior to a QRE.
 - 3) Within 48 hours after a QRE, conduct a post-storm event inspection to identify weather BMPs are adequately designed, implemented, and effective and identify any additional BMPs necessary and revise the SWPPP accordingly.
 - 4) At least once each 24 hours during extended storm events.
 - b. Conduct quarterly non-storm water inspections Conduct sampling and reporting as directed by CGP and outlined in the SWPPP Construction Site Monitoring Plan.
 - c. For Risk Level 2 and 3 sites only, prepare a REAP a minimum of 48 hours prior to a likely precipitation event with over a 50% or greater chance of producing precipitation on the project area.

- d. Precipitation forecast information shall be obtained from the National Weather Service Forecast Office (<http://www.srh.noaa.gov/>).
5. Non-compliance with the CGP and Unauthorized Discharges shall be reported to OWNER immediately.
6. Provide verification annually that construction activities are in compliance with SWPPP.
7. Maintain, Report, and update SWPPP and PRDs on the SMARTS website, including items listed below.
 - a. Upload SWPPP amendments.
 - b. Complete Ad-Hoc Reports for all sampling events. Non-Visible, Effluent Monitoring, and Exceedance Results must be reported electronically by deadlines per CGP.
 - c. Provide COI in SMARTS to reflect changes to construction site area, schedule, and risk level. COI shall be submitted to OWNER/LRP for certification.
8. Pay annual fees related to the CGP up until the date of Substantial Completion.
9. Pay fines and penalties from regulatory agencies against OWNER due to CONTRACTOR'S non-compliance with storm water regulations. OWNER shall recover costs of fines and penalties by appropriate OWNER assessment. Review of the SWPPP and inspection log by OWNER shall not relieve CONTRACTOR from liabilities arising from non-compliance of storm water pollution regulations.
10. Update Post Construction BMP Installation and Maintenance Log and complete Maintenance Plan, provided by ARCHITECT, to reflect 'actual products installed (See Attachment "A" Section 33 4000 Storm Drainage Utilities). Markup Site Plan, Appendix 2 of Attachment "A" of Section 33 4000 to reflect 'As-Built' conditions.

D. At Substantial Completion:

1. Provide SWPPP, Site Monitoring Reports, and record documents to OWNER.
2. Handover the maintenance log and maintenance plan to OWNER. OWNER will maintain prevention controls left in place.
3. Conduct Post-Construction BMP training of OWNER personnel.
4. Submit to OWNER Substantial Completion Certification that the Project has met all of the conditions of the CGP. Post-construction storm water operation and management plan as mentioned in the compliance certifications shall be in place at Substantial Completion.

5. Prepare the final Annual Report and NOT to terminate permit coverage. Submit NOT electronically with required attachments through the SMARTS system. NOT will be certified by the OWNER's LRP.
6. OWNER Maintenance and Operations will maintain prevention controls left in place after CONTRACTOR receives Substantial Completion.

1.04 SUBMITTALS

A. Submit the following:

1. Qualifications and experience of QSD and QSP for OWNER's review and acceptance.
2. Two electronic copies (CDs) of SWPPP updated and certified by QSD.
3. NOI application to OWNER/LRP for review and certification through SMARTS.
4. NOI fee statement along with payment to SWRCB.
5. Documentation in accordance with CGP requirements for SWPPP, including:
 - a. BMP material quality, grade, type as specified in the CASQA BMP Handbook.
 - b. Electronic Copies of weekly and quarterly inspections, annual reports, compliance certifications, and test results.
 - c. Proof of filing with the Water Board; copies of PRDs and all attachments.
 - d. Training records of CONTRACTOR site personnel.
 - e. BMP implementation schedule.
 - f. WPCD revisions.

B. SWPPP Closeout Documents: At Substantial Completion provide one hard copy and two CD's with electronic files of the documents listed below to OWNER.

1. Copy of SWPPP and PRDs, including NOI, Monitoring Program, Inspection Records, Annual Reports, Compliance Certifications, and supporting documents.
2. Updated and signed SWPPP amendments and amendment log.
3. Storm and non-storm water sampling records and test results, including Noncompliance Reports, when limits are exceeded.
4. Training Records for CONTRACTOR and OWNER personnel.
5. Maintenance records for post construction BMP, per Appendix 4 of Attachment "A" of Section 33 4000.

6. Updated Post-Construction Storm Water Management Plan to reflect ‘As-Builts’ conditions.
7. Notice of Termination.
9. Signed Substantial Completion Certification that the Project has met all of the conditions of the CGP.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with the following requirements:
 1. National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Lands Disturbance Activities; ORDER NO. 2009-0009-DWQ; NPDES NO. CAS000002, adopted by the State Water Resources Control Board.
 2. Regulations of the California Environmental Protection Agency, State Water Resources Control Board; Los Angeles Regional Water Control Board, and local ordinances.
 3. CASQA Stormwater Best Management Practice Handbook for Construction Activity (BMP Handbook), current adopted edition.
- B. Qualifications: CONTRACTOR’s QSP/QSD shall meet the following qualifications:
 1. Current certification as a CASQA Qualified SWPPP Practitioner/Developer.
 2. Two years minimum experience in erosion and sediment control and knowledgeable in the requirements of SWPPP, Best Management Practices and GCP.

1.06 STORAGE AND PROTECTION

- A. Provide proper storage of materials and equipment to prevent rain and storm water runoff to come in contact with pollutants, such as soil stabilizers, paint or fluids from vehicles.

1.07 TRAINING OF OWNER PERSONNEL

- A. Training of Owner’s personnel shall include 8 hours of on-site overview and maintenance of the following Post Construction BMPs:
 1. Bioretention Facilities, Planter Boxes and Proprietary Biotreatment Devices.
 2. Vegetated Swales, Vegetated Filter Strips and Green Roofs.
 3. Sand Filters and Cartridge Media Filters.

4. Infiltration Trenches, Dry Wells, Proprietary Infiltration Devices and Permeable Pavement.
 5. Hydrodynamic Devices and Catch Basin Inserts.
- B. Training of Owner's personnel on the Post Construction BMPs shall be per Section 33 4000, Storm Drainage Utilities.

1.08 ATTACHMENTS

- A. The following attachments are included at the end of this Section:
1. Attachment "A" - Site Monitoring Report.
- B. The following attachments are included at the end of Section 33 4000:
1. Attachment "A" - Post-Construction Storm Water Management Plan.
 2. Attachment "B" – Post-Construction Water Balance Calculator.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Provide quality, grade and type of materials as specified in the CASQA BMP Handbook.
- B. Provide and have available on-site during construction activities a non-stormwater sampling kit suitable for obtaining storm water and non-stormwater quality grab samples. Kit shall include containers and preservatives appropriate for the pollutants known or expected to be in the stormwater. Required sampling equipment shall be adequate to capture and transport samples to a local ELAP State certified water testing lab.
- C. Provide a rain gauge on site to record readings during site inspections.

PART 3 – EXECUTION

3.01 IMPLEMENTATION

- A. Install perimeter controls prior to starting work at the Project site.
- B. Implement BMPs as specified in the SWPPP to contain on-site storm water on the Project site. Provide storm drain inlet protection. Do not drain on-site water directly into the storm drain without proper BMPs in place. If an Active Treatment System (ATS) is used, comply with the design storm specified in the CGP (10-year, 24-hour event)
- C. Prevent pollutant discharges into the storm drain system. Prevent storm water from coming into contact with pollutants, such as material spills, or leakage from storage

tanks, waste containers or transfer areas. In the event contamination is found CONTRACTOR shall immediately notify OWNER.

- D. Protect exposed dirt, such as stockpiles, landscaping areas, and hillsides.
- E. Properly manage non-storm water discharges such as ground water, broken utility lines and fire hydrant testing per CGP requirements.
- F. Adjust BMP's locations and layouts in accordance to construction progress to assure compliance to regulations.
- G. Conduct inspections of pollution prevention controls and provide Site Monitoring Report to OWNER immediately if pollutants are discharged into the site runoffs. CONTRACTOR shall sample and remediate contaminated water.
- H. Upon Substantial Completion: Maintain and leave post-construction storm water pollution prevention controls in place and remove those that are not needed as determined by the QSD and OWNER.

3.02 SWPPP CLOSEOUT

- A. Verify the following prior to Substantial Completion of SWPPP:
 - 1. Elements of the SWPPP have been completed.
 - 2. Final stabilization of site, as defined by the GCP, has been demonstrated.
 - 3. There is no potential for construction related storm water pollutants to be discharged into site runoff.
 - 4. Construction related equipment and temporary BMPs have been removed from site.
 - 5. Rubbish, debris, and waste materials have been removed and legally disposed of off the Project site.
 - 6. OEHS CAN items have been closed and signed-off.
 - 7. Post-Construction BMP Maintenance Plan has been established.

END OF SECTION

<hr style="width: 80%; margin: 0 auto;"/> <p>OWNER Project Number</p>

**STORM WATER POLLUTION
PREVENTION
SITE MONITORING REPORT**

<p>STATE OF CALIFORNIA STATE WATER RESOURCES CONTROL BOARD</p>
--

Project Name: _____	Contract Number _____
Project Description: _____	

I. Type of Examination: (Use one form for each type of examination):

- Prior to Anticipated Storm Event
 After Actual Storm Event
 Weekly

Date Examined: _____

II. Check the response for each SWPPP question below:

	YES	NO
1. Do you have an updated Storm Water Pollution Prevention Plan (SWPPP) and a BMP Handbook on the Project site?	<input type="checkbox"/>	<input type="checkbox"/>
2. Does your SWPPP incorporate an up-to-date erosion control plan?	<input type="checkbox"/>	<input type="checkbox"/>
3. Is the erosion control installed per plan?	<input type="checkbox"/>	<input type="checkbox"/>
4. If the Work is at a stage where the erosion control plan can not be constructed, is the erosion control at the Maximum Extent Practicable for the stage you are in?	<input type="checkbox"/>	<input type="checkbox"/>
5. Did you observe the presence of any floating materials such as oil, grease, pieces of wood, paper, etc., odor, toxics, and/ or sediments?	<input type="checkbox"/>	<input type="checkbox"/>
6. If yes, what is it that you observed? _____		
7. Have the SWPPP revisions been certified by the QSD and uploaded to SMARTS?	<input type="checkbox"/>	<input type="checkbox"/>

III. Check the status of the following items as observed:

SWPPP Items	Not Applicable	Acceptable	Not Acceptable	Repairs Required	Date Repairs Completed
1. De-silting Basins (Cleaned)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
2. Water Quality Basin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
3. Silt Fences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
4. Hay bales/ Check dams/ Sandbags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
5. Berms and Dikes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
6. Sand/Gravel Inlet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
7. Slope Protection - Polymer and Mulch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
8. Vegetation / Re-vegetation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
9. Dust Control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
10. Surface Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
11. Slope Instability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
12. Storage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
13. Disposal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
14. Spills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
15. Clean-up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
16.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____
17.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> --	<input type="checkbox"/>	_____

IV. Describe any problems or required repairs checked above and the necessary actions needed:

Item	Description of Problem or Required Repair	Action Needed
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Examination Performed by
CONTRACTOR:

_____ By (Print Name and Title) _____ Date

Verified by Inspector:

_____ By (Print Name and Title) _____ Date

Detailed Storm Water Quality Construction Site Inspection Checklist

ATTACHMENT "A" (Cont.)

GENERAL INFORMATION			
Project Name			
Project Number			
Contractor			
Inspector's Name			
Inspector's Title			
Signature			
Date of Inspection			
Inspection Type (Check Applicable)	<input type="checkbox"/> Prior to forecast rain	<input type="checkbox"/> After a rain event	
	<input type="checkbox"/> 24-hr intervals during extended rain	<input type="checkbox"/> Other <u>Weekly</u> or <u>Quarterly</u>	
Season (Check Applicable)	<input type="checkbox"/> Rainy		<input type="checkbox"/> Non-Rainy
Storm Data	Storm Start Date & Time:		Storm Duration (hrs):
	Time elapsed since last storm (Circle Applicable Units)	Min. Hr. Days	Approximate Rainfall Amount (inches)

PROJECT AREA SUMMARY AND DISTURBED SOIL AREA (DSA) SIZE	
Total Project Area	_____ Acres
Field Estimate of Active DSAs	_____ Acres
Field Estimate of Non-Active DSAs	_____ Acres

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	Yes	No	N/A	Corrective Action
Preservation of Existing Vegetation				
Is temporary fencing provided to preserve vegetation in areas where no construction activity is planned?				
Location:				
Location:				
Location:				
Location:				
Erosion Control				
Does the applied temporary erosion control provide 100% coverage for the affected areas?				
Are any non-vegetated areas that may require temporary erosion control?				
Is the area where erosion controls are used required free from visible erosion?				
Location:				
Location:				
Location:				
Location:				
Temporary Linear Sediment Barriers (Silt Fence, Fiber Rolls, Sandbag Barriers, etc.)				
Are temporary linear sediment barriers properly installed, functional and maintained?				
Are temporary linear sediment barriers free of accumulated litter?				
Is the built-up sediment less than 1/3 the height of the barrier?				
Are cross barriers installed where necessary and properly spaced?				
Location:				
Location:				
Location:				
Location:				
Location:				
Storm Drain Inlet Protection				
Are storm drain inlets internal to the project properly protected?				
Are storm drain inlet protection devices in working order and being properly maintained?				
Location:				
Location:				
Location:				
Location:				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	Yes	No	N/A	Corrective Action
Location:				
Sediment Basins				
Are basins designed in accordance with the requirements of the General Permit?				
Are basins maintained to provide the required retention/detention?				
Are basin controls (inlets, outlets, diversions, weirs, spillways, and racks) in working order?				
Location:				
Location:				
Location:				
Location:				
Stockpiles				
Are all locations of temporary stockpiles, including soil, hazardous waste, and construction materials in approved areas?				
Are stockpiles protected from run-on, run-off from adjacent areas and from winds?				
Are stockpiles located at least 15 m from concentrated flows, downstream drainage courses and storm drain inlets?				
Are required covers and/or perimeter controls in place?				
Location:				
Location:				
Location:				
Location:				
Concentrated Flows				
Are concentrated flow paths protected and free from visible erosion?				
Location:				
Location:				
Location:				
Location:				
Tracking Control				
Is the entrance stabilized to prevent tracking				
Is the stabilized entrance inspected daily to ensure that it is working properly				
Are points of ingress/egress to public/private roads inspected and swept and vacuumed as needed?				
Are all paved areas free of visible sediment tracking or other particulate matter?				
Location:				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	Yes	No	N/A	Corrective Action
Location:				
Location:				
Location:				
Wind Erosion Control				
Is dust control implemented?				
Location:				
Location:				
Location:				
Location:				
Dewatering Operations				
Are all one-time dewatering operations covered by the General Permit inspected before and as they occur and BMPs implemented as necessary during discharge?				
Is ground water dewatering handled in conformance with the dewatering permit issued by the LARWQCB?				
Is required treatment provided for dewatering effluent?				
Location:				
Location:				
Location:				
Location:				
Vehicle & Equipment Fueling, Cleaning, and Maintenance				
Are vehicle and equipment fueling, cleaning and maintenance areas reasonably clean and free of spills, leaks, or any other deleterious material?				
Are vehicle and equipment fueling, cleaning and maintenance activities performed on an impermeable surface in dedicated areas?				
If no, are drip pans used?				
Are dedicated fueling, cleaning, and maintenance areas located at least 15 m away from downstream drainage facilities and watercourses and protected from run-on and runoff?				
Is wash water contained for infiltration/ evaporation and disposed of appropriately?				
Is on-site cleaning limited to washing with water (no soap, soaps substitutes, solvents, or steam)?				
On each day of use, are vehicles and equipment inspected for leaks and if necessary, repaired?				
Location:				
Location:				
Location:				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	Yes	No	N/A	Corrective Action
Location:				
Waste Management & Materials Pollution Control				
Are material storage areas and washout areas protected from run-on and runoff, and located at least 15 m from concentrated flows and downstream drainage facilities?				
Are all material handling and storage areas clean; organized; free of spills, leaks, or any other deleterious material; and stocked with appropriate clean-up supplies?				
Are liquid materials, hazardous materials, and hazardous wastes stored in temporary containment facilities?				
Are bagged and boxed materials stored on pallets?				
Are hazardous materials and wastes stored in appropriate, labeled containers?				
Are proper storage, clean-up, and spill-reporting procedures for hazardous materials and wastes posted in open, conspicuous and accessible locations adjacent to storage areas?				
Are temporary containment facilities free of spills and rainwater?				
Are temporary containment facilities and bagged/boxed materials covered?				
Are temporary concrete washout facilities designated and being used?				
Are temporary concrete washout facilities functional for receiving and containing concrete waste and are concrete residues prevented from entering the drainage system?				
Do temporary concrete washout facilities provide sufficient volume and freeboard for planned concrete operations?				
Are concrete wastes, including residues from cutting and grinding, contained and disposed of off-site or in concrete washout facilities?				
Are spills from mobile equipment fueling and maintenance properly contained and cleaned up?				
Is the site free of litter?				
Are trash receptacles provided in the yard, field trailer areas, and at locations where workers congregate for lunch and break periods?				
Is litter from work areas collected and placed in watertight dumpsters?				
Are waste management receptacles free of leaks?				
Are the contents of waste management receptacles properly protected from contact with storm water or from being dislodged by winds?				
Are waste management receptacles filled at or beyond capacity?				
Location:				
Location:				
Location:				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	Yes	No	N/A	Corrective Action
Location:				
Temporary Water Body Crossing or Encroachment				
Are temporary water body crossings and encroachments constructed appropriately?				
Does the project conform to the requirements of the 404 permit and/or 1601 agreement?				
Location:				
Location:				
Location:				
Location:				
Illicit Connection/ Discharge				
Is there any evidence of illicit discharges or illegal dumping on the project site?				
If yes, has the Owner/Operator been notified?				
Location:				
Location:				
Location:				
Location:				
Discharge Points				
Are discharge points and discharge flows free from visible pollutants?				
Are discharge points free of any significant sediment transport?				
Location:				
Location:				
Location:				
Location:				
SWPPP Update				
Does the SWPPP and Project Schedule adequately reflect the current site conditions and contractor operations?				
Are all BMPs shown on the Erosion Control Plans installed in the proper location(s) and according to the details in the SWPPP?				
Location:				
Location:				
Location:				
Location:				
General				
Are there any other potential concerns at the site?				
Location:				

INSPECTION OF BMPs - ATTACHMENT "A" (Cont.)				
BMP	Yes	No	N/A	Corrective Action
Location:				
Location:				
Location:				
Storm Water Monitoring				
Does storm water discharge directly to a water body listed in the General Permit as impaired for sediment/sedimentation or turbidity?				
If yes, were samples for sediment/sedimentation or turbidity collected pursuant to the sampling and analysis plan in the SWPPP?				
Did the sampling results indicate that the discharges are causing or contributing to further impairment?				
If yes, were the erosion/sediment control BMPs improved or maintained to reduce the discharge of sediment to the water body?				
Were there any BMPs not properly implemented or breaches, malfunctions, leakages or spills observed which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water?				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan during rain events?				
If sampling indicated pollution of the storm water, were the leaks, breaches, spills, etc. cleaned up and the contaminated soil properly disposed of?				
Were the BMPs maintained or replaced?				
Were soil amendments (e.g., gypsum, lime) used on the project?				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan in the SWPPP?				
If sampling indicated pollution of the storm water by the use of the soil amendments, is there a contingency plan for retention onsite of the polluted storm water?				
Did storm water contact stored materials or waste and run off the construction site? (Materials not in watertight containers, etc.)				
If yes, were samples for non-visually detectable pollutants collected pursuant to the sampling and analysis plan in the SWPPP?				

SECTION 01 7418
WATER POLLUTION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Control runoff and pollutants from the site during construction activities.

B. Related Requirements:

1. Division 01 – General Requirements.

1.02 ACRONYMS AND DEFINITIONS

BMP	Best Management Practice.
CAN	Corrective Action Notice.
CASQA	California Stormwater Quality Association.
CGP	NPDES General Permit for Storm Water Discharges Associated with Construction Activities.
DWQ	Division of Water Quality.
LARWQCB	Los Angeles Regional Water Quality Control Board.
NPDES	National Pollutant Discharge Elimination System.
SWPPP	Storm Water Pollution Prevention.
SWRCB	State Water Resources Control Board.

1.03 REQUIREMENTS

A. CONTRACTOR shall:

1. Implement Good Site Management "Housekeeping".
2. Install and maintain BMPs. Insure that BMPs are designed to protect all exposed portions of the site, including:
 - a. Erosion, Sediment, Tracking, and Wind Erosion Control BMPs.
 - b. Non--storm Water Control BMPs.
 - c. Waste Management BMPs.
3. Incorporate BMP activities into the Project Schedule.

4. Inform CONTRACTOR and Subcontractors personnel on the BMP procedures to prevent pollutants from entering the storm drain system, before the start of construction activities. Keep personnel informed of the BMP implementation process and of changes to the procedures. Provide record to OWNER of Storm Water Topics discussed.
5. Pay fines and penalties from regulatory agencies against OWNER due to CONTRACTOR'S non-compliance with storm water regulations. OWNER shall recover costs of fines and penalties by appropriate OWNER assessment. Review of the BMPs by OWNER shall not relieve CONTRACTOR from liabilities arising from non-compliance of storm water pollution regulations.

1.04 SUBMITTALS

- A. BMP material quality, grade, type as specified in the CASCA BMP Handbook.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with the following requirements:
 1. National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Lands Disturbance Activities; ORDER NO. 2009-0009-DWQ; NPDES NO. CAS000002, adopted by the State Water Resources Control Board.
 2. Regulations of the California Environmental Protection Agency, State Water Resources Control Board; Los Angeles Regional Water Control Board, and local ordinances.
 3. CASQA Stormwater Best Management Practice Handbook for Construction Activity (BMP Handbook) current adopted edition.

1.06 STORAGE AND PROTECTION

- A. Provide proper storage of materials and equipment to prevent rain and storm water runoff to come in contact with pollutants, such as soil stabilizers, paint or fluids from vehicles.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION

3.01 IMPLEMENTATION

- A. Install perimeter controls prior to starting Work at the Project site.

- B. Implement BMP plan to contain on-site storm water on the Project site. Provide storm drain inlet protection. Do not drain on-site water directly into the storm drain without proper BMP in place.
- C. Prevent pollutant discharges into the storm drain system. Prevent storm water from coming into contact with pollutants, such as sediment, material spills, or leakage from storage tanks, waste containers or transfer areas. In the event contamination is found CONTRACTOR shall immediately notify OWNER.
- D. Protect exposed dirt, such as stockpiles, landscaping areas, and hillsides.
- E. Properly manage non-storm water discharges such as ground water, broken utility lines and fire hydrant testing per BMP Implementation Plan.
- F. Adjust BMP's locations and layouts in accordance to construction progress to assure compliance to regulations.
- G. Conduct inspections of pollution prevention controls and provide Site Monitoring Report to OWNER immediately if pollutants are discharged into the site runoff. CONTRACTOR shall remediate contaminated water.
- H. Upon Substantial Completion: Maintain and leave post-construction storm water pollution prevention controls in place and remove those that are not needed as determined by the OWNER.

3.02 CLOSEOUT

- A. Verify the following prior to Substantial Completion:
 - 1. Final stabilization of site has been demonstrated.
 - 2. There is no potential for construction related storm water pollutants to be discharged into site runoff.
 - 3. Construction related equipment and temporary BMP have been removed from site.
 - 4. Rubbish, debris, and waste materials have been removed and legally disposed of off the Project site.
 - 5. CAN items have been closed and signed-off.

END OF SECTION

SECTION 01 7419

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Preparation and implementation, including reporting and documentation, of a Waste Management Plan for reusing, recycling, salvage or disposal of non-hazardous waste materials generated during demolition and new construction (Construction and Demolition (C&D) Waste), to foster material recovery and re-use and to minimize disposal in landfills.
- B. Related Requirements
 - 1. Section 01 3300 - Submittal Procedures.
 - 2. Section 01 5000 - Construction Facilities and Temporary Controls.
 - 3. Section 01 7700 - Contract Closeout.

1.02 REFERENCES

- A. California Integrated Waste Management Act of 1989 (AB 939).
- B. California Code of Regulations Title 14, Section 18700 et seq.
- C. California Green Building Standards Code.

1.03 SYSTEM DESCRIPTION

- A. Collection and separation of all C&D waste materials generated on-site, reuse or recycling on-site, transportation to approved recyclers or reuse organizations, or transportation to legally designated landfills, for the purpose of recycling salvaging and reusing a minimum of 75 percent of the C&D waste generated.

1.04 SUBMITTALS

- A. C&D Waste Management Plan (Exhibit 1): Within 10 calendar days after the Notice to Proceed and prior to any waste removal, submit the following to the OWNER for review and approval. Update quarterly. Include:
 - 1. Materials to be recycled, reused, or salvaged, either onsite or offsite.
 - 2. Estimates of C&D waste quantity (in tons) by type of material. (If waste is measured by volume, give factors for conversion to weight in tons.)
 - 3. Procedures for recycling and reuse program.
 - 4. Permit or license and location of Project waste-disposal areas.

5. Site plan for placement of waste containers.
- B. C&D Waste Management Monthly Progress Report (Exhibit 2): Summary of waste generated by Project, monthly with Application for Payment. Include:
1. Firms accepting the recovered or waste materials.
 2. Type and location of accepting facilities (landfill, recovery facility, used materials yard, etcetera). If materials are reused or recycled on the Project site, location should be designated as “on-site reuse and recycling”.
 3. Type of materials and net weight (tons) of each.
 4. Value of the materials or disposal fee paid.
 5. Attach weigh bills and other documentation confirming amount and disposal location of waste materials.
- C. C&D Waste Management Final Compliance Report: Final update of Waste Management Plan to provide summary of total waste generated by Project.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 IMPLEMENTATION

- A. Implement approved Waste Management Plan including collecting, segregating, storing, transporting and documenting each type of waste material generated, recycled or reused, or disposed in landfills.
- B. Designate an on-site person to be responsible for instructing workers and overseeing the sorting and recording of waste/ recyclable materials.
- C. Include waste management and recycling in worker orientation and as an agenda item for regular Project meetings.
- D. Recyclable and waste bin areas shall be limited to areas approved on the Waste Management Plan. Keep recycling and waste bins neat and clearly marked to avoid contamination of materials.

3.02 ATTACHMENTS

- A. Exhibit 1: Waste Management Plan
- B. Exhibit 2: Waste Management Monthly Progress Report.

EXHIBIT 1

**WASTE MANAGEMENT PLAN
CONSTRUCTION/ MAINTENANCE/ALTERATION & DEMOLITION PROJECTS**

PROJECT NAME: «PROJECTTITLE» «CONTRACTTITLE»
 PROJECT NO: «Project Number»
 NAME OF COMPANY: _____
 CONTACT PERSON: _____
 TELEPHONE: _____
 PROJECT SITE LOCATION: _____
 PROJECT TYPE: NEW CONSTRUCTION DEMOLITION
 MAINTENANCE/ALTERATION PROJECTS
 PROJECT SIZE (SQ. FT.): _____
 DATE & ESTIMATED PERIOD _____

(1) Material Type	(2) Tons Estimated Recycle	(3) Tons Estimated Reuse	(4) Tons Estimated Salvage	(5) Tons Estimated Landfill	(6) Proposed Disposal or Recycling Facility (e.g., Onsite, Name of Facility)
Total					
Diversion Rate: Columns [(2)+(3)+(4)] / [(2)+(3)+(4)+(5)]					=

Signature	Title	Date
-----------	-------	------

- Column 1 "Material Types" – Enter type of materials targeted for recycling, reuse, and/or salvage, either on- or off-site, and include a category for waste materials requiring disposal.
- Columns 2 thru 4 "Estimated Generation" - Enter estimated quantities (tons) of recyclable, reusable, or salvageable waste materials anticipated to be generated and state number of salvageable items.
- Column 5 "Estimated Landfill" - Enter quantities (tons) of materials to be disposed in landfill.
- Column 4 "Disposal Location" - Enter end-destination of recycled, salvaged, and disposed materials.
- General : (1) Attach proposed Recycling and Waste Bin Location Plan.
 (2) Attach name and contact data for each recycling or disposal destination to be used.

EXHIBIT 2

**WASTE MANAGEMENT PROGRESS REPORT
CONSTRUCTION/ MAINTENANCE/ALTERATION & DEMOLITION PROJECTS**

PROJECT NAME: «PROJECTTITLE» «CONTRACTTITLE»
 PROJECT NO: «Project Number»
 NAME OF COMPANY: _____
 CONTACT PERSON: _____
 TELEPHONE: _____
 PROJECT SITE LOCATION: _____
 PROJECT TYPE: NEW CONSTRUCTION DEMOLITION
 MAINTENANCE/ALTERATION PROJECTS
 PROJECT SIZE (SQ. FT.): _____
 PERIOD _____ to _____

(1) Material Type	(2) Tons Actual Recycle	(3) Tons Actual Reuse	(4) Tons Actual Salvage	(5) Tons Actual Landfill	(6) Disposal or Recycling Facility (e.g., Onsite, Name of Facility)
Total					
Diversion Rate: Columns [(2)+(3)+(4)] / [(2)+(3)+(4)+(5)]					=

Signature	Title	Date
-----------	-------	------

- Column 1 "Material Types" – Enter type of materials targeted for recycling, reuse, and/or salvage, either on- or off-site, and include a category for waste materials requiring disposal.
- Columns 2 thru 4 "Estimated Generation" - Enter estimated quantities (tons) of recyclable, reusable, or salvageable waste materials anticipated to be generated and state number of salvageable items.
- Column 5 "Estimated Landfill" - Enter quantities (tons) of materials disposed.
- Column 4 "Disposal Location" - Enter end-destination of recycled, salvaged, and disposed materials.
- General : (1) Attach proposed Recycling and Waste Bin Location Plan.
 (2) Attach name and contact data for each recycling or disposal destination to be used.

END OF SECTION

SECTION 01 7700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section includes administrative and procedural requirements for Contract Closeout, including but not limited to, the following:
1. Inspection procedures.
 2. Project record documents submittal.
 3. Operation and maintenance manual submittal.
 4. OWNER orientation and instruction.
 5. Final cleaning.

1.02 RELATED REQUIREMENTS:

1. Section 01 2976 - Progress Payment Procedures.
2. Section 01 3213 - Construction Schedule.
4. Section 01 3300 - Submittal Procedures.
5. Section 01 4525- Testing, Adjusting, and Balancing of HVAC.
6. Section 01 5000 - Construction Facilities and Temporary Controls.
7. Section 01 7836 - Warranties.

PART 2 – PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 SUBSTANTIAL COMPLETION

- A. Inspection Procedures: On receipt of the Request For Certificate of Substantial Completion, OWNER will authorize commencement of inspection. OWNER, CONTRACTOR and ARCHITECT will inspect the Work.

1. If after inspection of the Work, OWNER does not consider the Work substantially complete, OWNER will notify CONTRACTOR.
2. If after inspection, OWNER considers the Work substantially complete, ARCHITECT shall prepare a comprehensive Punch List of items to be corrected.
 - a. ARCHITECT may repeat inspection to assure the Work is corrected.
 - b. Results of the completed inspection will form a partial basis of the requirements for Release of Retention.

3.02 ADMINISTRATIVE CLOSEOUT

- A. Re-inspection Procedures: OWNER, CONTRACTOR and ARCHITECT may inspect the Work upon notice, including final inspection of Punch List items from earlier inspections, has been corrected, except for items whose completion is delayed under circumstances acceptable to OWNER.
 1. OWNER has the right to preclude CONTRACTOR from Punch List correction and documents submittals after the Contract Completion date; unless OWNER elects to authorize CONTRACTOR to extend Administrative Contract duration. CONTRACTOR will be assessed actual cost for the unsettled items. Withholds amounts exceeding actual costs to correct or to obtain deliverable will be released.
 2. If allowed by the OWNER, re-inspection will be repeated, but may be assessed against CONTRACTOR if OWNER is subject to additional professional service and or additional costs of inspection.

3.03 PROJECT RECORD DOCUMENT SUBMITTAL

- A. General: Do not use project record documents for construction purposes. Protect record documents from deterioration and loss. Provide access to record documents for ARCHITECT and OWNER reference during normal working hours. Project record document shall be updated on a weekly basis. Prior to submitting each application for payment, secure ARCHITECT approval of project record documents.
- B. Record Drawings: Maintain a clean, undamaged set of prints of Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark the Drawing that is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Drawings. Provide detailed and accurate field dimensions for concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work. Date and number entries in the same format as submitted. Call attention to entry by a “cloud” around the affected areas.
 2. Mark new information important to OWNER but was not shown on Drawings or Shop Drawings.
 3. Utility location and depth below finished grade and above ceilings and attic spaces shall be fully dimensioned and indicated on record drawings. Dimensions shall be measured from building lines or permanent landmarks and shall be triangulated to those features.
 4. Note related Change Order or Construction Directive numbers where applicable. RFC submissions shall be referenced on each affected sheet, Drawing and Shop Drawing.
 5. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
 6. Prior to Contract Completion of the Work, review of the project record drawings by ARCHITECT; prepare a final set of project record drawings using reproducible vellum. Submit final set of transparencies to ARCHITECT.
- C. Record Specifications: Maintain two complete copies of the Specifications, including Addenda. Include with the Specifications two copies of other written Contract Documents, such as Change Orders or Construction Directives issued during construction.
1. Mark these record documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 2. Give particular attention to substitutions and selection of options and information on concealed Work that cannot otherwise be readily discerned later by direct observation.
 3. Note related record document information with Product Data.
 4. Prior to Contract Completion of the Work, submit record Specifications to ARCHITECT for OWNER records.
- D. Record Product Data: Maintain two copies of each Product Data submittal. Note related Change Orders and Construction Directives and mark-up of record drawings and Specifications.

1. Mark these documents to illustrate significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the Project site and from the manufacturer's installation instructions and recommendations.
 2. Provide detailed and accurate information regarding concealed products and portions of Work that cannot otherwise be readily discerned later by direct observation.
 3. Prior to Contract Completion, submit complete set of record Product Data to ARCHITECT for OWNER records.
- E. Record Samples: Immediately prior to Substantial Completion, CONTRACTOR shall meet with ARCHITECT and OWNER at the Project site to determine which Samples are to be transmitted to OWNER for record purposes. Comply with OWNER instructions regarding delivery to OWNER storage area.
- F. Miscellaneous Records: Refer to other Specification sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Prior to the date of Contract Completion, complete and compile miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to Architect for OWNER records.
- G. Maintenance Manuals: Prior to Substantial Completion, organize operation and maintenance data into suitable two sets of manageable size. Bind properly indexed data in individual, heavy-duty, two to three-inch 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Submit to ARCHITECT for OWNER records. Include the following types of information.
1. Emergency instructions.
 2. Spare parts list.
 3. Copies of warranties.
 4. Wiring diagrams.
 5. Recommended "turn-around" cycles.
 6. Inspection procedures.
 7. Shop Drawings and Product Data.
 8. Fixture lamping schedule.

3.04 OPERATION AND MAINTENANCE:

- A. Operation and Maintenance Instructions: Prior to Substantial Completion, arrange for each installer of equipment that requires regular operation and maintenance to meet with designated OWNER personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:
1. Maintenance manuals.
 2. Spare parts and materials.
 3. Tools.
 4. Lubricants.
 5. Fuels.
 6. Identification systems.
 7. Control sequences.
 8. Hazards.
 9. Cleaning.
 10. Warranties and bonds.
 11. Maintenance agreements and similar continuing commitments.
- B. As part of instruction for operating equipment, demonstrate the following procedures:
1. Start-up.
 2. Shutdown.
 3. Emergency operations.
 4. Noise and vibration adjustments.
 5. Safety procedures.
 6. Economy and efficiency adjustments.
 7. Effective energy utilization.
- C. Notice Of Termination: CONTRACTOR shall submit a Notice of Termination (NOT) to the local Regional Water Quality Control Board, RWQCB. Provide a copy of NOT to OWNER.

3.05 FINAL CLEANING

- A. General: Related sections of the Contract Documents specify general cleaning during performance of the Work. General cleaning is included in Division 01 Section “Construction Facilities and Temporary Controls”.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer’s instructions.
 - 1. Complete the following cleaning operations before requesting inspection for a certificate of Substantial Completion.
 - a. Remove labels that are not permanent labels.
 - b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - c. Clean exposed exterior and interior hard-surfaced finished to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
 - d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
 - e. Clean the Project site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

END OF SECTION

SECTION 01 7836

WARRANTIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section includes administrative and procedural requirements for warranties, including manufacturers and installer's standard warranties on products and special product warranties.
 - 1. Refer to the General Conditions for terms of the guarantee period for the Work.

1.02 RELATED REQUIREMENTS

- A. Section 01 6000 - Product Requirements.
- B. Section 01 7329 - Cutting and Patching.
- C. Section 01 7700 - Contract Closeout.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 WARRANTY REQUIREMENTS

- A. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties shall not relieve CONTRACTOR of the warranty of the Work incorporating such materials, products, and equipment. Manufacturer's disclaimers and limitations on warranties do not relieve suppliers, manufacturers, installers, and Subcontractors of the requirement to countersign special warranties with CONTRACTOR.
- B. Standard warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to OWNER.
- C. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for OWNER.

- D. **Related Damages and Losses:** When correcting failed or defective warranted Work, remove and replace Work that has been damaged as a result of such failure or which must be removed and replaced to provide access for correction of warranted Work.
- E. **Reinstatement of Warranty:** When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement with the reinstated warranty equal to the original warranty.
- F. **Replacement Cost:** Upon determination the Work covered by a warranty has failed and/or is defective, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. CONTRACTOR is responsible for the cost of replacing or rebuilding defective Work regardless of whether OWNER has benefited from use of the Work through a portion of its anticipated useful service life.
- G. **OWNER Recourse:** Expressed warranties made to OWNER are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which OWNER can enforce such other duties, obligations, rights, or remedies.
- H. **Rejection of Warranties:** OWNER reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
- I. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, OWNER reserves the right to refuse to accept the Work until CONTRACTOR presents evidence the entities required to countersign such commitments have done so.

3.02 SUBMITTALS

- A. Submit written preliminary warranties prior to Substantial Completion and final warranties prior to Contract Completion. If the certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, submit written warranties as set forth in the certificate of Substantial Completion.
 - 1. When a designated portion of the Work is partially used and/or occupied by OWNER, submit properly executed warranties to ARCHITECT within fifteen days of the Partial Use or Occupancy of the designated portion of the Work.
- B. When the Contract Documents require CONTRACTOR, or CONTRACTOR and a Subcontractor, installer, supplier or manufacturer to execute a special warranty, prepare a written document containing appropriate terms and identification, ready

for execution by the required parties. Submit a draft to OWNER, through the ARCHITECT, for approval prior to final execution.

1. Refer to Divisions 02 through 49 for specific content requirements and particular requirements for submitting special warranties.
- C. Form of Submittal: Prior to Contract Completion, compile two copies of each required final warranty properly executed by CONTRACTOR, or by CONTRACTOR and Subcontractor, installer, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the Specifications.
- D. Bind warranties and bonds in heavy-duty, commercial-quality, durable three ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8½ by 11 paper.
1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the item or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the installer.
 2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title and/or name, and name of CONTRACTOR.
 3. When warranted Work requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

END OF SECTION

SECTION 01 7900

MAINTENANCE AND OPERATIONS STAFF DEMONSTRATION AND TRAINING

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Administrative and procedural requirements for training OWNER's personnel.
 - 1. Demonstration of operations of systems, subsystems and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.

1.02 RELATED REQUIREMENTS

- A. Project Commissioning Plan (CxP).
- B. CAL/OSHA Minimum Ventilation Standard, Title 8, Section 5142.
- C. California Building Code, Chapter 12.
- D. Division 01 - General Requirements.
- E. Division 22 - Plumbing.
- F. Division 23 – Heating Ventilating and Air Conditioning.
- G. Division 26 - Electrical.

1.03 SUBMITTALS

- A. Submittals, including training modules, require the Commissioning Agent's (CxA's) review and OWNER acceptance prior to implementation.
- B. Instruction Program:
 - 1. Ninety days prior to Startup and Testing, submit a draft outline of the instructional program for demonstration and training, including the training module objectives and outline for each training module, schedule of proposed training dates, training times, length of instruction time and instructors' names for each training module. Submittal(s) shall be on a CD-ROM in a MS Word format file. CxA will review and OWNER accept,

CONTRACTOR 's proposed Instruction Program or comment and return to CONTRACTOR for revision and incorporation of comments within 30 days of receipt.

2. Revise and resubmit finalized Instruction Program 45 days prior to Startup and Testing. CxA will review CONTRACTOR's revised Instruction Program and OWNER accept or return for further revision and incorporation of unaddressed revisions and/or comments or unacceptable revisions within five days of receipt.
 3. Revise and incorporate comments and resubmit to OWNER within five days of receipt. CxA will review CONTRACTOR's revised Instruction Program and OWNER accept the revised Instruction Program within five days of receipt or require CONTRACTOR to meet with CxA within five days of receipt to revise and incorporate unaddressed revisions and/or comments. CONTRACTOR shall be assessed reasonable fees and expenses incurred by CxA for these meetings.
- C. Upon completion of training, submit two complete training manuals for OWNER's use and one CD-ROM including materials in the complete training manual in the Adobe PDF format. Each manual shall contain specific training and instruction manuals and hand-outs for the following designated end-users:
1. Site Administration.
 2. Plant Manager.
 3. OWNER Maintenance and Operations (M&O) Personnel.
- D. Qualification Data: Three weeks prior to start of training, CONTRACTOR shall submit Letters of Qualifications and Project Lists for persons and firms providing instruction including:
1. Training Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel and end-users in training program similar to that required for this Project, and who has a record of successful training performance.
 2. Training Instructor Qualifications: Instructor shall be factory-authorized service representative, experienced in operation and maintenance procedures and training for each system, subsystem or piece of equipment.
 3. References: The name of owner and the name and telephone number of the plant manager and maintenance supervisor on three similar projects for reference.

- E. Attendance Record: For each training module, submit the proposed list of participants, sign in sheets and length of instruction time a minimum of 15 days prior to start of training of the module.
- F. Evaluations: For each participant and for each training module, submit results and documentation of performance-based tests a minimum of seven days following completion of training of each module.
- G. Demonstration and Training Video: CONTRACTOR shall video record each classroom training and demonstration session and submit a copy on CD-ROM or DVD in a format compatible with MS Windows Media Player at end of each training module. CONTRACTOR shall include a copy of manufacturer training video materials presented during training and demonstration session.

1.04 COORDINATION

- A. Coordinate instruction schedule with the CxA, and OWNER's M&O personnel. Adjust schedule as required to reasonably accommodate the schedules of participants and to minimize disrupting OWNER operations.
- B. Coordinate with instructors, including providing notification of scheduled dates, times, length of instruction time and course content.
- C. Coordinate content of training modules with content of approved Emergency Manual and Operations and Maintenance Manual. Do not submit instruction program until manual has been reviewed and accepted by the Owner.

1.05 INSTRUCTION PROGRAM

- A. Program Structure: Develop instruction program that includes individual demonstration and training modules for the operation, maintenance, minor repair (completion in under two hours) and calibration of systems and components in the system as required by Section 01 9113, Divisions 22, 23 and Division 26 and as specified in Part 3 of this Section, "DEMONSTRATION AND TRAINING".
- B. Training Modules: Develop learning objective and teaching outline for each module, specific and as applicable, for the following OWNER personnel:
 - 1. Site Administration.
 - 2. Plant Manager.
 - 3. Operations and Maintenance.
- C. Include description of specific skills and knowledge that participant is expected to master.

- D. For each module, include instruction for the following:
1. Basis of System Design (for OWNER Operations and Maintenance Personnel), Operational Requirements and Criteria, including, but not limited to:
 - a. System, subsystem and equipment descriptions.
 - b. Performance and design criteria if CONTRACTOR is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 2. Documentation (for OWNER Operations and Maintenance Personnel and Plant Manager): Review in detail the following documentation:
 - a. Emergency manuals.
 - b. Operations manuals.
 - c. Maintenance manuals.
 - d. Project Record Documents.
 - e. Identification systems.
 - f. Warranties.
 - g. Maintenance service agreements and similar continuing commitments.
 3. Emergencies (for OWNER Operations and Maintenance Personnel and Plant Manager): Review, without limitation, the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.

- c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
4. Operations (for OWNER Operations and Maintenance Personnel and Plant Manager): Review, without limitation, the following as applicable:
- a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for system, subsystem or equipment failure.
 - j. Seasonal and weekend operating instructions.
 - k. Required sequences for electric or electronic systems.
 - l. Special operating instructions and procedures.
5. Adjustments (for OWNER M&O Personnel): Review, without limitation, the following as applicable:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.

6. Troubleshooting (for OWNER M&O Personnel): Review, without limitation, the following as applicable:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance (for OWNER M&O Personnel and Plant Manager): Review, without limitation, the following, as applicable:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventative maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs (for OWNER M&O Personnel): Review, without limitation, the following as applicable:
 - a. Diagnostic instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair and replacement and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of parts needed for operation and maintenance.
9. Staff Training:
 - a. Manual for the basic operation/control of the HVAC room sensor/thermostat and lighting controls.
 - b. Organizational chart structure, to be completed by OWNER, for repair or emergency requests for the systems including contact information of the Plant Manager.

1.06 PREPARATION

- A. Training Facilitator: Engage qualified training facilitator no later than 120 days prior to start of training to prepare instruction program and training modules, to coordinate instructors, and to coordinate between CONTRACTOR and CxA for number of participants, instruction times and location.
- B. Training Instructor: Engage qualified training instructors to instruct OWNER's personnel to adjust, operate and maintain systems, subsystems and equipment not part of a system no later than 30 days prior to start of training of assigned modules.
- C. Scheduling: Provide instruction at mutually agreed on times.
 - 1. Schedule training with OWNER with at least two weeks advance notice.
 - 2. Schedule training to conform to personnel availability at Site.
 - 3. Conduct training(s) after the execution of commissioning Pre-functional and Functional Tests are completed.
 - 4. Base duration of training on hours specified in the applicable specifications or minimums defined in Article 1.08.
- D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of oral, written, demonstration, or combination of oral, written, and demonstration based testing.
- E. Demonstration and Training Video: Record each training module separately. Include classroom instructions and demonstrations, board diagrams and other visual aids, excluding attendee practice or testing.
 - 1. Make demonstration and testing videos at Site to ensure video is representative of installed system. As part of training, devote one lesson plan to reviewing of video to allow new employees to view the video recordings at their own convenience and be able to operate the video system without need for instructor attendance.
 - 2. At the beginning of each video recording for the training module, incorporate a chart presenting the learning objective and lesson outline.
- F. In addition to technical training, attendees shall be trained on how to provide future training for new employees.
- G. Familiarize OWNER staff regarding CAL/OSHA Title 8, section 5142 Requirements.

- H. Cleanup: Collect excess copies of educational materials and give to OWNER. Remove instruction equipment. Restore systems and equipment to condition existing just before commencing training.

1.07 OPERATIONS AND MAINTENANCE MANUALS

- A. CONTRACTOR shall direct Subcontractors to compile and prepare M&O Manuals and other required documentation for the equipment and systems that are provided and/or installed per their scope of work for submittal to OWNER prior to project closeout.
- B. The OWNER shall receive a copy of the Operations and Maintenance manuals prior to initiation of demonstration and training for review and acceptance or rejection.
- C. Operations and Maintenance manuals shall meet the respective requirements of Divisions 22,23 and Division 26, and Section 01 7700; and comply with the following:
 - 1. Quantity: Two.
 - 2. Format: 8 ½ by 11 loose leaf binders. Each binder shall be clearly labeled on the spine and meet the requirements of Section 01 7700. Dividers shall be made of card stock with permanently marked index tabs to separate each section and sub section. Tab labels shall not be handwritten. Binders will meet other formatting requirements as outlined in DIVISIONS 02 to 49, as applicable.
 - 3. Contents: There shall be a title page and table of contents at the beginning of each binder. The table of contents shall be an outline that identifies the equipment or systems documentation included in the binder and references the specification sections relating to the equipment and systems that are being included in each part of the binder. Each part of the binder shall contain the information described below, in the following order.
 - a. CONTRACTOR. The first page shall contain the name, address, and telephone number of the manufacturer and installing CONTRACTOR, as well as the 24-hour number for emergency service for each piece of equipment identified in this section.
 - b. Preventive Maintenance Instructions. This section shall list the location of preventative maintenance instructions. The list shall show the piece of equipment, the Operations and Maintenance document name, and the O&M document page number that contains the instructions.

- c. Submittal and Product Data. This section shall include product data not covered by manufacturer's Operations and Maintenance instructions and associated shop drawings.
- d. Warranty and Service Contracts. This section shall include the following for each piece of equipment, as applicable:
 - 1) Copy of the equipment warranty information provided as part of Section 01 7836.
 - 2) Additional Warranties in accordance with Warranty requirements in DIVISIONS 02 to 49, as applicable. Equipment Warranties shall clearly list requirements to maintain the Warranty in effect, conditions or acts that would invalidate or void the Warranty, and Warranty expiration date.
 - 3) Service contracts issued. Contracts shall clearly indicate contract dates and scope of work included.
- e. Operation and Maintenance Instructions. These shall be the written manufacturer's maintenance and operating instructions with the model number and features of the installed equipment or system clearly identified. This section shall include applicable data on the following:
 - 1) Installation, startup, and break-in instructions.
 - 2) Starting, normal shutdown, emergency shutdown, manual operation, seasonal changeover and normal operating procedures and data, including any special limitations.
 - 3) Operations and Maintenance and installation instructions that were shipped with the unit.
 - 4) Preventative maintenance and service procedures and schedules.
 - 5) Troubleshooting procedures.
 - 6) A parts list, edited to omit reference to items which do not apply to this installation.
 - 7) A list of any special tools required to service or maintain the equipment.

8) Performance data, ratings, and curves.

f. Control Drawings. This section contains controls drawings and the final sequence of operations, set points, and schedules as set during the Commissioning Process. If shop drawings, portions of the project manual, or record drawings clearly show this information, a copy of this information may be inserted. Otherwise, original drawings shall be generated and included in this section.

D. Division 23 Special Water and Air Balance Documentation. The Balancing Subcontractor will compile and submit the following with other documentation that may be specified elsewhere in the Project Specifications.

1. Final report containing an explanation of the methodology, assumptions, test conditions, and the results in a clear format with designations of all uncommon abbreviations and column headings.
2. The Balancing Subcontractor shall mark on the drawings where all traverse and other critical measurements were taken and cross reference the location in the Test and Balance report.

1.08 DEMONSTRATION AND TRAINING SCHEDULE

A. The following applies to the minimum duration of demonstration and training provided District Maintenance and Operations Personnel.

1. HVAC Systems:
 - a. Air-handling Equipment: Minimum six hours.
 - b. Air Distribution Systems: Minimum four hours.
 - c. Terminal Equipment and Devices: Minimum six hours.
2. HVAC Instrumentation and Controls: Minimum sixteen hours.
3. Lighting Systems and Controls: Minimum four hours.

PART 2 – PRODUCTS – N/A

PART 3 – EXECUTION – N/A

END OF SECTION

SECTION 01 9113
GENERAL COMMISSIONING REQUIREMENTS

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. This Section defines the Contractor's responsibilities with respect to Commissioning. The Contractor shall include this scope in the bid. This includes administrative and procedural requirements as well as a detailed execution of Commissioning. This Section supplements Section 01 4523 – Testing and Inspection, Section -01 4525 Testing, Adjusting, and Balancing for HVAC, as well as the Divisions 22 - Plumbing, Division 23 – Mechanical, and Division 26 – Electrical sections which specify testing procedures.

1.02 DEFINITIONS

- A. Commissioning (Cx): A systematic process which verifies that the building systems perform according to the Owner's Design Intent/Basis of Design (ODI/BOD). Commissioning includes system documentation, equipment startup, control system calibration, Testing, Adjusting and Balancing (TAB) verification, performance testing, and training.
- B. Commissioning Agent (CxA): OWNER appointed entity that plans and coordinates all activities which implement Commissioning as outlined by the Owner's Design Intent/Basis of Design (ODI/BOD). The CxA has overall responsibility for planning and coordinating Commissioning. Commissioning activities that take place during construction shall be based on the Contractor's construction schedule.
- C. Commissioning Plan (CxP): A contract document that identifies the project Commissioning goals, Owner's Design Intent/Basis of Design, commissioning milestones, coordination requirements, and project specific Pre-functional Equipment Checklists and Functional Performance Test Checklists. The CxP shall be incorporated by Contractor into the Construction Quality Control Plan.
- D. Pre-functional Equipment Checklist (PEC): A form for each piece of equipment referenced in '1.08 SYSTEMS TO BE COMMISSIONED' that must be completed by the Contractor as a prerequisite to the equipment's Functional Performance Test (FPT). Sample checklists and PEC forms are included in the CxP. The checklists and forms are completed by the Contractor and verified by the CxA.
- E. Functional Performance Test (FPT): A documented test designed by the Commissioning Agent (CxA) that verifies the dynamic functioning and operation of equipment and systems with the goal of verifying that the Owners' Design Intent/Basis of Design (ODI/BOD) is met. Sample testing requirements and forms

are included in the CxP. Test procedures are performed by the Contractor and witnessed by the CxA.

- F. Acceptance - A formal action, taken by a person with appropriate authorization, to declare that some aspect of the project meets defined requirements – thereby permitting subsequent activities to proceed.
- G. Checklists - Documents that are developed and used during all phases of commissioning to verify that the ODI/BOD is being achieved. This includes checklists for general verification, testing, training, and other specific requirements. Various checklists are prepared by the CxA and the contractor to document completion of testing and/or commissioning of equipment and systems.
- I. Coordination Drawings - Drawings showing the work of all trades to illustrate that equipment can be installed in the space allocated without compromising equipment function or access for maintenance and replacement. These drawings graphically illustrate and dimension manufacturers' recommended maintenance clearances.
- K. Control system – A component of an environmental, HVAC, electrical, lighting, or energy management system for the reporting, monitoring and/or issuing of commands to and/or from field devices.
- L. Data logging -The monitoring and recording of flows, currents, status, pressures, etc., of equipment using stand-alone data recorders separate from the installed control system or the trending capabilities of those control systems.
- M. Deficiency - A condition that is not in compliance with the contract documents relative to the installation or function of a component, piece of equipment, or system.
- N. Factory Testing - Testing of equipment at the factory or on-site by factory personnel with, or without, an owner's representative present.
- O. Issues Log - A formal and ongoing record of problems or concerns – and their resolution – that have been raised by members of the commissioning team during the course of commissioning.
- P. Seasonal Performance Tests - Tests that are performed when weather conditions are comparable to the design conditions based or the design conditions can be simulated.
- R. Simulated Condition - Condition that is created for the purpose of testing the response of a system (for example: raising/lowering the set point of a thermostat to see the response in a VAV box).
- S. Startup - The initial starting or activating of dynamic equipment.

- T. Systems Manual - A system-focused composite document that includes the operation manual, maintenance manual, manufacturer's technical diagrams and additional information of use to the owner during facility occupancy and operation.
- U. Test Procedure - A written protocol that defines methods, procedures, personnel, and expected outcomes for tests conducted on components, equipment, assemblies, systems, and interfaces among systems. The test procedures are specified in the Commissioning Plan and Technical Specifications sections of the contract documents and the CxP.
- V. Training Plan - A written document that details the expectations, schedule, budget, and deliverables of commissioning activities related to the training of facility operating and maintenance personnel, users, and occupants.
- X. Verification - The process by which specific documents, components, equipment, assemblies, systems, and interfaces among systems are confirmed to comply with the criteria described in the Owner's Design Intent/Basis of Design. Verification testing is performed per the prescribed test procedure(s) by the contractor and witnessed by the CxA.
- Y. Trending – The analysis of system performance gathered over a period of time by a building management system or other electronic data gathering equipment.

1.03 RELATED REQUIREMENTS

- A. Section 00 7300 – Supplementary Conditions.
- B. Section 01 1216 – Phasing of the Work.
- C. Section 01 2100 – Allowances.
- D. Section 01 2513 – Product Substitution Procedures.
- E. Section 01 3113 – Project Coordination.
- F. Section 01 3119 – Project Meetings.
- G. Section 01 3213 – Construction Schedule.
- H. Section 01 3300 - Submittal Procedures.
- I. Section 01 4523 - Testing and Inspection.
- J. Section 01 4525 - Testing, Adjusting, and Balancing for HVAC.
- K. Section 01 5000 – Construction Facilities and Temporary Controls.
- L. Section 01 7700 – Contract Close-Out.

- M. Section 01 7836 – Warranties.
- N. Section 01 7900 – Maintenance & Operation Staff Demonstration and Training.
- O. Section 23 0800 – HVAC Systems Commissioning.
- P. Section 26 0800 – Electrical Systems Commissioning.

1.04 REFERENCES

- A. Guideline 1.1-2007 -- HVAC&R Technical Requirements for the Commissioning Process.
- B. Associated Air Balance Council Commissioning Guidelines.
- C. Sample Commissioning Plan Documentation.

1.05 COORDINATION

- A. Items listed below require coordination between the Contractor, OWNER, and CxA. Details regarding each item are provided through out this Section and/or Sections 01 7900, 23 0800, and 26 0800.
 - 1. Cx Schedule and Meeting Venue.
 - 2. Commissioning Meeting Attendance.
 - 3. Completion of Pre-functional Equipment Checklists (PEC).
 - 4. Functional Performance Testing (FPT).
 - 5. Operations & Maintenance Manual Submittal and Training.
 - 6. Documentation of Pre-functional Equipment Checklists (PEC) & Functional Performance Testing (FPT) Inspections.

1.06 SUBMITTALS

- A. Submittal documentation required for the commissioning work will be identified by the CxA and integrated into the normal submittal process and protocol of the construction team. At minimum, the CxA's documentation request will identify the manufacturer and model number, the manufacturer's printed installation and detailed startup procedures, full sequences of operation, O&M data, performance data, any performance test procedures, control drawings and details of owner contracted tests. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians shall be submitted. All such documentation will be included by subcontractors in their O&M manual submittals.

- B. The CxA will review and recommend acceptance or any required revision to the OWNER for all submittals related to the commissioned equipment for conformance with the contract documents as they relate to commissioning, performance of the equipment, and their adequacy of test procedures. This review is intended primarily to aid in the development of performance procedures and only secondarily to verify compliance with equipment specifications. The CxA will notify the OWNER of items missing or areas that are not in conformance with contract documents and which require resubmission. Submittal of O&M manual documentation does not constitute compliance. The CxA will review all such document submittals and recommend to OWNER their acceptance or any required revisions.
- C. Submittal documentation specified in Specifications 23 0800 and 26 0800.

1.07 CONTRACTOR RESPONSIBILITIES

- A. The general responsibilities of Contractor and Subcontractors in commissioning are defined in this section. The specific responsibilities are in the Division 22 and 23 and Division 26 Technical Specifications. All parties shall:
 - 1. Follow the Commissioning Plan.
 - 2. Attend commissioning meetings.
- B. Contractor, its design team, subcontractors and vendors shall assign representatives with expertise and authority to act on their behalf and schedule them to participate in and perform required commissioning activities including, but not limited to, providing all tools, or the use of tools, to start, check-out and test equipment and systems, except for specified testing with portable data recorders which shall be supplied and installed by the CxA. Contractor and subcontractors shall:
 - 1. Facilitate coordination of Commissioning.
 - 2. Incorporate Commissioning activities (the CxP) into the Project Schedule.
 - 3. Coordinate and direct Commissioning activities in a logical, sequential and efficient manner using consistent protocols and forms, centralized documentation, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules and technical expertise.
 - 4. Participate in up to three meetings specifically for Commissioning-related items as scheduled by the OWNER.

5. Review and accept construction checklists developed by the CxA.
6. Provide information required to perform commissioning tasks, including O&M materials, contractor startup and checkout lists.
7. No later than 60 days prior to startup of the first piece of major equipment, meet with the CxA and OWNER to finalize the detailed commissioning procedures and schedule.
8. Before startup, provide detailed startup procedures including current control sequences and interlocks to comply with the detailed functional test plans.
9. Provide one additional copy of all submittals required in Section 01 3300 for all systems being commissioned for review of compliance with commissioning needs by the CxA.
10. Develop and coordinate a startup and initial systems checkout plan with subcontractors and ensure that all subcontractors and vendors execute their commissioning responsibilities according to the contract documents.
11. Review TAB execution plan.
12. Oversee sufficient testing of the control system before TAB is executed.
13. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
14. Coordinate retesting as necessary until satisfactory performance is achieved
15. Complete checklists as work is completed and provide to OWNER on a weekly basis.
16. Review equipment warranties to ensure that the owner's responsibilities to keep warranties in force are clearly defined.
17. Oversee and coordinate the training of the owner's personnel.
18. Review and approve the preparation of the O&M manuals including clarifying and updating of original sequences of operation to as-built/as-tested conditions.
19. Coordinate development of a systems manual

1.08 SYSTEMS TO BE COMMISSIONED

- A. Systems to be commissioned for this project include, but are not limited to, those for which Specifications are included in Contract Documents and as listed in:

1. Section 23 0800, Article 1.06 - Equipment And Systems To Be Commissioned.
2. Section 26 0800, Paragraph 3.01.B.

PART 2 – PRODUCTS

2.01 TEST EQUIPMENT

- A. Standard testing equipment required to perform startup and initial checkout and required performance testing shall be provided by the contractor for the equipment being tested. This includes, but is not limited to, two-way radios and meters, etc. Testing specified as requiring portable data recorders will be performed with data recorders supplied and installed by the CxA.
- B. Testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance within the tolerances specified in the specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers shall have a current certified calibration to an accuracy of 0.5 degree F and a resolution of plus or minus 0.1 degree F. Pressure sensors shall have an accuracy of plus or minus 2.0 percent of the value range being measured (not full range of meter) and have been calibrated within the last year. All equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates readily available.

PART 3 – EXECUTION

3.01 MEETINGS

- A. Commissioning Kick-off Meeting: Within 15 days following issuance of Notice-to-Proceed 1 (NTP 1), the OWNER will schedule a Construction Quality Control kick-off meeting. The INSPECTOR, Cx team and Contractor Quality Control representative will be in attendance. CxA shall prepare and distribute a list of commissioning topics to be placed on the meeting agenda. Attendance at this meeting and participation in the Commissioning topics is mandatory for the following Contractor personnel:
 1. Contractor's Quality Control Engineer and Commissioning Representative.
 2. Contractor's Project Scheduling personnel.
 3. Mechanical Subcontractors.
 4. Electrical Subcontractors.

5. TAB Subcontractor.
 6. Controls Subcontractors.
- B. Other Commissioning Meetings. Other Cx meetings will routinely be scheduled and generally be conducted in conjunction with regularly scheduled site meetings as the Construction progresses. The Commissioning portion of meetings will cover upcoming implementation and coordination of the CxP, deficiency resolution, and planning issues with particular subcontractors.

3.02 STARTUP, CONSTRUCTION CHECKLISTS, AND INITIAL CHECKOUT

- A. The following procedures apply to all equipment/systems to be commissioned:
1. General: Contractor shall use PECs to verify that the equipment and systems are fully connected and operational. PECs for a given system must be successfully completed and accepted prior to startup and formal performance testing of equipment or subsystems of the given system.
 2. Startup and Checkout Plan: The CxA will assist the project commissioning team members responsible for startup of any equipment. The primary role of the CxA in this process is to ensure that there is written documentation and that each of the manufacturer-recommended procedures has been completed. The CxA shall provide all the required pre-functional checklists and forms to be completed by Contractor in the CxP. The CxA will ensure that the INSPECTOR and/or District Special Inspectors are informed as to the planned and scheduled startup and checkout procedures.
 - a. Sample Pre-Functional checklists are provided as an attachment to the CxP. These checklists indicate required procedures to be executed prior to equipment startup.
 - b. Contractor shall determine which trade is responsible for executing and documenting each of the line item tasks and transmit the checklists to the responsible subcontractors. Each form may have more than one trade responsible for its execution.
 - c. The contractor/subcontractor responsible for the purchase and/or installation of the equipment shall develop a comprehensive startup plan (with assistance from the CxA) by combining the manufacturer's detailed startup and checkout procedures and the pre-functional checklists.
 - d. The contractor/subcontractor shall submit the full startup plan to the CxA for review and approval.

- e. INSPECTOR will review and accept, based on CxA recommendation, the procedures and the documentation format for reporting. The CxA will return the procedures and the documentation format to Contractor.
 - f. Contractor shall transmit the full startup plan to the subcontractors for their review and use.
- B. Sensor and Actuator Calibration. All field-installed temperature, relative humidity, CO, CO₂, refrigerant, O₂, and/or pressure sensors and gages, and all actuators (dampers and valves) on all equipment shall be calibrated. Verify that all locations are appropriate and away from causes of erratic operation. Submit to the CxA the calibration methods and results. All test instruments shall have had a current certified calibration record. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated. Contractor to field verify all installed sensors.

1. Sensor Calibration Methods:

- a. All Sensors: Verify that all sensor locations are appropriate and away from causes of erratic operation. Verify that sensors with shielded cable are grounded only at one end. For sensor pairs that are used to determine a temperature or pressure difference, make sure they are reading within 0.2 degrees F of each other for temperature and within a tolerance equal to 2 percent of the reading of each other for pressure.
- b. Sensors Without Transmitters: Standard Application. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, install offset in BAS, calibrate or replace sensor.
- c. Sensors With Transmitters: Standard Application. Make a reading with a calibrated test instrument within 6 inches of the site sensor. Verify that the sensor reading (via the permanent thermostat, gage or building automation system (BAS)) is within the tolerances in the table below of the instrument-measured value. If not, install offset in BAS and calibrate or replace sensor.

2. Tolerances, Standard Applications:

<u>Sensor</u>	<u>Required Tolerance (+/-)</u>
Cooling coil, chilled and condenser water temps	0.4F

AHU wet bulb or dew point	2.0F
Hot water coil and boiler water temp	1.5F
Outside air, space air, duct air temps	0.4F
Wathour, voltage & amperage	1 percent of design
Pressures, air, water and gas	3 percent of design
Flow rates, air, water	10 percent of design
Flow rates, water Relative humidity	4 percent of design
Combustion flue temps	5.0F
Oxygen or CO ₂ monitor	0.1 percent pts
CO monitor	0.01 percent pts
Natural gas and oil flow rate	1 percent of design
Barometric pressure	0.1 inch of Hg

3. Valve and Damper Stroke Setup and Check EMS Readout: For all valve and damper actuator positions checked, verify the actual position against the BAS readout. Set pumps or fans to normal operating mode. With the command calve and damper closed, visually verify that the command valve or damper is closed and adjust output zero signal as required. With the command valve or damper open, visually verify that the position is full open and adjust output signal as required. Set command valve or damper to a few intermediate positions. If actual valve or damper position doesn't reasonably correspond, repair or replace actuator.
4. Closure for heating coil valves (NO): Set heating set point 20 degrees F above room temperature. Visually observe valve open. Set heating set point to 20 degrees F below room temperature. Visually observe the valve close. Restore to normal.
5. Closure for cooling coil valves (NC): Set cooling set point 20 degrees F above room temperature. Visually observe the valve close. Set cooling set point to 20°F below room temperature. Visually observe valve open. Restore to normal.

C. Execution of Construction Checklists and Startup:

1. Four weeks prior to the scheduled startup, Contractor shall coordinate startup and checkout with the INSPECTOR and CxA. The execution and approval of the PECs, startup, and checkout shall be directed and performed by Contractor, subcontractor or vendor. Signatures are required of the applicable subcontractors for verification of completion of their work.

2. The INSPECTOR shall observe, as a minimum, the procedures performed for each piece of primary equipment, unless there are multiple units; in which case a sampling strategy may be used. The CxA shall observe all testing.
3. For lower-level components of equipment, (e.g., sensors, controllers), the CxA shall observe a sampling of the startup procedures.
4. Pre-functional checklist documentation, identified in the CxP, is to be used by the sub-contractor to document that equipment is ready for startup.
5. The subcontractors and vendors shall execute startup and provide the CxA with a signed and dated copy of the completed startup and construction checklists.
6. Only individuals of the contractor or sub-contractor (technicians, engineers, manufacturer's representatives/vendors, supervisors, etc.) who have direct knowledge and have witnessed that a line item task on the construction checklist was actually performed shall check off that item.

D. Deficiencies, Non-Conformance, and Approval in Checklists and Startup (Issues Log):

1. The contractor shall ensure that the subcontractors clearly list any outstanding items of the initial startup and construction checklist procedures that were not completed successfully, on an attached sheet. The form and any outstanding deficiencies shall be provided, through the INSPECTOR, to the CxA within two days of test completion.
2. The CxA will review the report and issue either a non-compliance report or acceptance form, through the INSPECTOR, to Contractor. The installing subcontractors or vendors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner, shall notify the INSPECTOR as soon as outstanding items have been corrected, and resubmit an updated startup report with a Statement of Correction on the original non-compliance report. When satisfactorily completed, the CxA will recommend approval of the execution of the checklists and startup of each system.
3. Items left incomplete, which later cause deficiencies or delays during performance testing, may result in assessments to Contractor. Refer to Paragraph 3.05, herein, for details.

3.03 GENERAL REQUIREMENTS FOR TESTING

- A. Complete the following at least two weeks prior to Functional Performance Testing:

1. Arrange for Commissioning observations to be performed by the CxA.
2. Completion and acceptance of the Start-up Plan by the CxA.
3. Correction of deficiencies identified during start-up.
4. Recording of pretest set points.

3.04 FUNCTIONAL PERFORMANCE TESTING (FTP)

- A. Undertake functional testing after the testing requirements listed in Paragraph 3.02 are completed.
- B. Equipment: Refer to Part 2 of this Section for test equipment requirements.
- C. Perform FPT under the observation of the CxA who will verify the results of the functional test procedures documented by Contractor.
- D. Perform all specified tests according to approved testing procedures / plan.
 1. Verify and test performance using actual conditions whenever possible.
 2. Simulate conditions when it is not practical to test under actual conditions or when required seasonal testing conditions are not present. The procedure to be used shall be submitted to the OWNER for CxA review and acceptance at least one week before simulated testing is to occur. After test, return settings to normal operating conditions.
 3. Alter set points when simulating conditions is not practical and when written approval to do so is received from OWNER.
 4. Override sensor values with a signal generator when actual or simulated conditions and altering set points are not practical. Do not use the sensor to act as the signal generator to simulate conditions or override values.
- E. Functional Performance Testing (FPT) Documentation: This Section specifies the general description of the minimum Divisions 22, 23 and 26 Functional Performance Testing documentation requirements that the Contractor shall provide. The CxA will develop testing procedures in accordance to the requirements of this Section and incorporate into the Cx Plan that Contractor must follow and document. The testing documentation must include the following information:
 1. Test number.
 2. Date and time of the test.

3. Indication of whether the record is for a first test or retest following correction of a problem or issue.
 4. Identification of the system, subsystem, assembly, or equipment.
 5. Conditions under which the test was conducted, including (as applicable) ambient conditions, set points, override conditions, and status and operating conditions that impact the results of the test.
 6. Expected performance of the systems and assemblies at each step of the test.
 7. Narrative description of observed performance of the system, equipment, or assembly.
 8. Notation to indicate whether the observed performance at each step meets the expected results.
 9. Issue number, if any, generated as the result of the test.
 10. Dated signatures of the person performing the test and a witness.
- F. The CxA and INSPECTOR will review and OWNER, if applicable, accept functional testing results. Deficiencies found during testing shall be submitted to the OWNER and, if required, corrected by the Contractor and retested. Where there is a dispute over a deficiency, OWNER, based on the recommendation of ARCHITECT, shall be the final authority.
- G. Problem Solving: The burden of responsibility to solve, correct and retest problems is with the Contractor and the design team, based on the recommendations of the ARCHITECT and CxA, having final responsibility for acceptance of the Work.
- H. Substantial Completion: All testing, retesting, and acceptance of Functional Performance Testing shall be completed prior to issuing the Certificate of Substantial Completion. FPT may be conducted following building occupancy; however, all associated and reasonable additional costs incurred by the CxA shall be assessed against Contractor Retention or Withhold funds.
- I. Deficiencies in the Cx Plan Functional Performance Test Checklist: If there is any Functional Performance Test Checklist missing for any particular piece of equipment, the Contractor shall inform the CxA and ask for an updated Functional Performance Test Checklist.

3.05 RETESTING

- A. Retesting shall be required when a specific Pre-functional Checklist or Start-up test item, reported to have been successfully completed by Contractor or determined during functional testing to be faulty or incomplete, is identified.

- B. Contractor shall be provided one retest opportunity at no additional cost when Contractor can affect corrections within two hours of identification of the need to retest. Costs for retesting beyond one retest, or when Contractor cannot affect corrections within two hours of identification of the need to retest, will be assessed against Contractor funds if OWNER determines, based upon the recommendation of the CxA, that the Contractor is responsible for the deficiency. These costs shall include all reasonable expenses incurred by the CxA.
- C. For a deficiency identified during functional testing, but not included in the approved Start-up Plan, OWNER will direct retesting of the equipment with no costs assessed against Contractor for this initial retesting. Costs for retesting, when Contractor cannot affect corrections within two hours of identification of the need to retest, will be assessed against Contractor funds if OWNER determines, based upon the recommendation of the CxA, that the Contractor is responsible for the deficiency. These costs shall include all reasonable expenses incurred by the CxA.
- D. Retesting shall not be considered a reason for a claim of delay or for a time extension by the Contractor.

3.06 DEFERRED TESTING

- A. Unforeseen Deferred Tests: Checks or tests not completed due to the incomplete Work, required occupancy conditions, or other conditions may be delayed upon approval of the OWNER based upon the recommendation of the CxA. These tests may be conducted in the same manner as the seasonal tests.
- B. Seasonal Testing: Complete seasonal testing, when weather or other testing conditions do not emulate the system's design conditions, employing simulated conditions acceptable to OWNER based upon the recommendation of the CxA. The OWNER will coordinate with Contractor, and CxA validate, this activity. Tests shall be executed, documented and deficiencies corrected by the Contractor, with the CxA witnessing. The Contractor shall make adjustments to the Operations and Maintenance Data, as necessary.

3.07 DOCUMENT REVIEW

- A. General: See paragraph 1.06 for submittal requirements.
- B. Operations and Maintenance Manuals: Refer to Section 01 7900 for specific requirements.

3.08 OPERATOR TRAINING

- A. The CxA, under the direction of the OWNER, coordinates and verifies training completion as shown in Section 01 7900. Forms and procedures are also described in the CxP.

120727

END OF SECTION

SECTION 03 0130

RESTORATION AND CLEANING OF CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes epoxy resin adhesive for:
 - 1. Epoxy injection of cracks.
 - 2. Grouting of cracks by gravity flow.
 - 3. Repair of spalling concrete.
- B. Related Requirements
 - 1. Division 01 - General Requirements.
 - 2. Division 07: Thermal and Moisture Protection.

1.02 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings indicating areas to receive restoration.
- B. Product Data:
 - 1. Submit manufacturer's product literature and installation procedures.
 - 2. Submit laboratory test reports indicating compliance with the Specifications.

1.03 QUALITY ASSURANCE

- A. Continuous inspection of epoxy repair procedures shall be performed by the Project Inspector in accordance with CBC.
- B. Inspection shall be performed by a representative of a testing laboratory selected by the Owner. The Owner will pay for inspection costs. Notify the laboratory 24 hours in advance of time concrete is to be mixed and notify the laboratory within 24 hours of postponement or cancellation of mixing.
- C. Installer of epoxy resin adhesive and concrete repair shall be certified by the manufacturer.
- D. Manufacturer: Regularly engaged in manufacture of epoxy resin products for at least 10 years. Provide references of at least five projects for which epoxy resin adhesive treatment was installed.

1.04 PROJECT CONDITIONS

- A. Materials shall not be installed during existing or forecasted freezing or inclement weather.
- B. Protect adjacent surfaces from damage by equipment, tools, or materials.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in manufacturer's unopened containers bearing manufacturer's name and product identification.
- B. Store and condition materials as recommended by product manufacturer.

PART 2 - PRODUCTS

2.01 MANUFACTURER

- A. Provide products by one of the following manufacturers:
 - 1. Sika Corporation.
 - 2. Fosroc Inc.
 - 3. The Euclid Chemical Co.
 - 4. Equal.

2.02 PERFORMANCE COMPLIANCE

- A. Core drill at least one test hole for every 100 feet of cracks, in accordance with CBC requirements. Refer to related Section 01 4523 - Testing and Inspection. Patch holes after core drilling samples.

2.03 MATERIALS

- A. Epoxy Resin Adhesive for Pressure Injection and Gravity Flow Grouting of Cracks:
 - 1. Modified epoxy resin containing suitable viscosity control agents and accelerators.
 - 2. Material shall not contain asbestos.
 - 3. Material shall be approved by the United States Department of Agriculture.
- B. Epoxy Resin Adhesives:
 - 1. Sikadur 35, Hi-Mod LV, by Sika Corporation.
 - 2. Nitofil LV, by Fosroc Inc.

3. Euco #452 LV System, Euclid Chemical Company.
 4. E-396 Series, by Micro Capsule Engineering.
 5. Equal.
- C. Materials for Repairing Spalling Concrete:
1. Surface Seal Paste: Sika Top/110 Armatec; Nitoprime Zincrich; Euco Zinc Prime, or equal.
 2. Patching Material: Sika Top 123 PLUS; Renderoc HB; Euco Verticoat, or equal.
- D. Materials for Patching Test Core Holes: One part Portland cement and three parts sand.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Surfaces adjacent to cracks and spalled concrete shall be cleaned with all dust, grease, foreign particles and disintegrated materials removed by sandblasting, high-pressure water blasting, grinding, chipping or abrasive wheel. Cracks shall be free of standing water and/or frost.
- B. Installation of gravity flow grouting shall be performed by removing a V-notch portion of the crack to a maximum width of 1/4 inch and for the required length. Remove dust and loose debris. Where the underside of the concrete slab is accessible, seal visible cracks with epoxy resin adhesive paste or Portland cement based quick-setting compound to retain installed adhesive until cured.
- C. Remove broken and spalled concrete down to sound material and to a minimum depth of one inch around steel reinforcing bars. Clean steel bars by sand blasting.

3.02 APPLICATION OF EPOXY

- A. Manual application of epoxy resin shall be performed by mixing only that quantity of material that can be installed in 20 to 30 minutes at 73 degrees F. Automated application of high pressure injection shall be performed with a portable unit, equipped with positive displacement type pumps, air-powered or electric, with interlock for positive ratio control of exact material proportioning at the nozzle. Pumps shall provide in-line mixing and metering system and contain drain-back plugs.
- B.
- C. Placement Procedure:
 1. High Pressure Injection:

- a. Provide porting devices as required by manufacturer, do not exceed maximum spacing. Spacing shall not exceed thickness of substrate and shall be calibrated to provide travel of material for grouting between ports. Fill cracks to maximum.
 - b. On structures where both sides are accessible, provide porting devices on both sides at staggered elevations. Install mixed epoxy resin sealing adhesive over cracks and around each porting device, to provide an adequate adhesive seal during injection grouting.
 - c. Where required, install sealing adhesive to provide minimal defacing or discoloration of substrate.
 - d. Inject epoxy from bottom-most port. Install until epoxy appears out of next higher port. Plug lower port and start injecting into the port above. Repeat procedure until crack is grouted.
- 2. Low Pressure Injection: Material installation shall be performed by a manufacturer certified applicator in accordance with the manufacturer's written recommendations.
 - 3. Gravity Flow Grouting: Furnish mixed material into V-notches and install until cracks are completely filled.
- D. If penetration of a crack is not feasible, notify the Architect before discontinuing injection or grouting procedures. If modification of procedure is required to fill cracks, submit proposed modification to the Architect for review before proceeding.
 - E. Install materials for repair of spalling concrete in accordance with the manufacturer's written recommendations.

3.03 FILLING TEST HOLES

- A. Fill holes with mixture of sand, Portland cement, and water. Finish to match existing adjacent surface.

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.05 CLEANING

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 03 10 00

CONCRETE FORMWORK

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:

1. Design and construction of formwork for concrete.
2. Setting in forms, all anchor bolts, metal inserts, sleeves, etc., embedded in concrete.
3. Miscellaneous concrete work, including but not limited to areaways, cast-in-place valve boxes, pits, splash blocks, equipment bases, and other items as shown or required to complete all Work.

B. Related Work Specified Elsewhere:

1. Portland Cement Concrete Paving: Formwork for site concrete work, Section 03 30 00.
2. Furnishing and placing reinforcing for cast-in-place concrete, Section 03 20 00.
3. Furnishing, placing, finishing, and curing of cast-in-place concrete, Section 03 30 00.
4. Placing of embedded anchor bolts and inserts, Section 03 30 00.
5. Screeds for slabs, Section 03 30 00.
6. Screeds for insulating concrete, Section 03 30 00.
7. Screeds for composite insulating concrete, Section 03 30 00.

1.02 REFERENCES, CODES AND STANDARDS: The following latest edition of the references, codes and standards are hereby made a part of this Section and work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes adopted by the Governing Agency shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

1. American Concrete Institute (ACI) – ACI 347 "Recommended Practice for Concrete Formwork".
2. American Concrete Institute (ACI) – ACI 301 "Specifications for Structural Concrete Buildings."
3. Standard Tolerances for Concrete Construction and Materials - ACI 117.
4. Building Code Requirements for Reinforced Concrete - ACI 318.

5. International Building Code with State of California Amendments (CBC).
6. West Coast Lumber Inspection Bureau (WCLIB) Grading and Dressing Rules No. 17.

1.03 DEFINITIONS:

- A. Unexposed Finish: A general-use finish, with no appearance criteria, applicable to all formed concrete concealed from view after completion of construction.
- B. Exposed Finish: A general-use finish applicable to all formed concrete exposed to view and including surfaces which may receive a paint coating (if any).

1.04 SYSTEM REQUIREMENTS:

- A. Formwork Design Requirements: Formwork products and execution specified herein are for finish surface quality only.
 1. Design, layout and construction of formwork shall be solely the responsibility of the Contractor.
 2. Design and construct formwork, shoring and bracing to conform to California Building Code (CBC) requirements and ACI 318.
 3. Resulting concrete shall conform to shapes, lines and dimensions indicated and required.
 4. Tolerances for concrete shall be as specified in ACI 117, ACI 301, ACI 318 and ACI 347, unless otherwise specified or indicated.

1.05 SUBMITTALS:

- A. Timing: Allow a minimum of two weeks for review of submittals.
- B. Shop Drawings: Submit shop drawings showing form pattern layouts of all exposed exterior and interior concrete dimensioned to precisely locate grooves, form panel jointing, and similar features. Review and approval will not include form strength and adequacy.
- C. Record Document: Keep an accurate record of the dates of removal of forms, form shores and reshores, and furnish copies to the Architect.
- D. Submit product data for all proprietary items to be used on project.

1.06 QUALITY ASSURANCE:

- A. Construct forms according to ACI 347 "Recommended Practice for Concrete Formwork", and conforming to tolerances specified in ACI 301, "Specifications

for Structural Concrete for Buildings", as applicable, unless exceeded by code requirements or otherwise indicated or specified.

- B. Prior to construction of formwork for concrete beams and slabs above grade, Contractor shall conduct a meeting at the site to determine and define all cambers required for the project. The Architect, Structural Engineer of record, Contractor and Contractor's formwork installer shall be in attendance at this meeting.
- C. Formwork Designer's Qualifications: When required by authorities having jurisdiction, designer of formwork shall be a Civil or Structural Engineer registered to practice in the State of California.

1.07 REGULATORY REQUIREMENTS:

- A. Regulatory Requirements: Conform to formwork construction requirements of the California Building Code (CBC) as amended and adopted by authorities having jurisdiction.
- B. Coordination: Coordinate Work specified in this Section with other Sections which require placement of embedded products and provision of openings and recesses. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from the Architect before proceeding.

1.08 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver materials for forms in timely manner to ensure uninterrupted progress.
- B. Store materials by methods that prevent damage and permit ready access for inspection and identification.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Form lumber: WCLIB "Construction" grade or better, WWPA No. 1 or better, or equal.
- B. Form plywood: PS-1, Group I, Exterior Grade B-B Plyform or better, minimum 5-ply and 3/4" thick for exposed locations and not less than 5/8" thick for unexposed locations, grade marked, not mill oiled, Plywood having medium or high density overlay is acceptable.

- C. Coated form plywood: For exposed painted concrete, plastic overlaid plywood of grade specified above, factory coated with a form coating and release agent equal to "Noxcrete".
- D. Tube forms: Burke "SmoothTube", Sonoco "Seamless Sonotubes", Alton Building Products "Sleek Seamless Standard Wall", or equal, type leaving no marks in concrete, 1-piece lengths for full required heights.
- E. Joist forms: Approved steel or molded plastic types as required.
- F. Special forms: For exposed integrally-colored concrete, plywood as above with high density overlay, plywood with integral structural hardboard facing or fibrous glass reinforced plastic facing, or approved equal producing specified finish.
- G. Hardboard: For curved surfaces, tempered hardboard, Masonite Corp., or equal.
- H. Lumber: Douglas fir or douglas fir-larch, grade appropriate for intended use, sound and undamaged straight edges, solid knots.
- I. Fillets for Chamfered Corners: Wood molding at plywood or lumber forms; rigid plastic at steel, fiberglass and plastic forms.
- J. Embedded Nailers: Clear all heart redwood or pressure preservative-treated (PPT) douglas fir, edges reverse beveled to key into concrete.
- K. Form ties: Prefabricated rod, flat band, wire, internally threaded disconnecting type, or equal, not leaving metal within 1-1/2" of concrete surface leaving no hole larger than 1".
- L. Form coating: Non-staining clear coating free from oil, silicone, wax, not grain-raising, "Formshield" by A.C. Horn, Inc., "Release" by Burke Concrete Accessories, or "Cast-Off" by Sonneborn Building Products. Where form liners are used, provide form coatings recommended by form liner manufacturer. Form coating shall comply with applicable air quality regulations for volatile organic compounds (VOC's).
- M. Form liner: Rigid or resilient type by L.M. Scofield, Labrado Forms, Symons, Greenstreak, or equal, types shown or directed, matching approved Sample.

PART 3 - EXECUTION

3.01 WORKMANSHIP:

- A. Rigidly construct forms to prevent mortar leakage, sagging, displacement or bulging between studs. Use clean, sound, approved form material, coated with specified materials only, not oil. Provide backing on all plywood joints.
- B. Sides of all footings and grade beams shall be formed, unless permission is obtained to place concrete directly against earth. Where this permission is granted, the footing or grade beam dimension shall be increased 3". Remove formwork prior to backfilling operations.

3.02 FORM ERECTION AND REMOVAL:

- A. Conform to ACI 301, 2007 CBC Section 1906A, and ACI 347 except as exceeded by the requirements of Code, regulatory agencies, or herein.
- B. Formwork Bracing and Shoring: Provide bracing and shores to ensure stability of formwork and accommodate all construction loads. Use form ties of sufficient strength and sufficient quantities to prevent formwork spreading. Maintain principal shores to support concrete until minimum required strength is achieved.
- C. Construction: Coat forms with the specified resin coating, not form oil. Construct forms to exact shapes, sizes, lines, and dimensions required to obtain level, plumb, and straight surfaces. Provide openings, offsets, keys, reglets, anchorages, recesses, moldings, chamfers, blocking, screeds, drips, bulkheads, and all other required features. Make forms easily removable without hammering or prying against concrete. Space forms apart with metal spreaders. Construct forms to accurate alignment, location and grades, and provide against sagging, leakage of concrete mortar, or displacement occurring during and after placing of concrete. Coordinate installation of inserts and anchors in forms according to Shop Drawings and requirements for work of other sections.
- D. Camber: Place suitable jacks, wedges, or similar means to induce camber and to correct settlement in forms before and during concrete placing. Camber shall be as determined in pre-installation meeting specified above. In general, formwork shall be capable of accommodating camber of 1/8" per 10' of span plus 1/4".
- E. Corners and Angles: Provide 3/4" by 3/4" beveled chamfer strips for all exposed concrete corners and angles unless otherwise indicated. Form concealed concrete corners and angles square unless otherwise indicated.
- F. Reglets and Rebates: Form required reglets and rebates to receive frames, flashing, and other equipment. Obtain required dimensions, details, and precise positions for work to be installed under other sections and form concrete accordingly.

- G. Form Joints: Fill joints to produce smooth surfaces, intersections, and arrises. Use polymer foam or equivalent fillers at joints and where forms abut or overlap existing concrete to prevent leakage of mortar.
- H. Recesses, Drips, and Profiles: Provide smooth milled wood or preformed rubber or plastic shapes of types shown and required.
- I. Cleanouts and Cleaning: Provide temporary openings in all wall forms and other vertical forms for cleaning and inspection. Clean forms and surfaces to receive concrete prior to placing.
- J. Screeds: Set screeds and establish level for tops of concrete slabs and leveling for finish surfaces. Shape surfaces as indicated on the Drawings. Provide cradle, pad or base type screed supports for concrete over waterproof membranes and vapor retarders.
- K. Form Cleaning, General: Clean and remove foreign matter within forms as erection and placement proceeds. Clean formed cavities of debris prior to concrete placement.
- L. Formwork Reuse: Do not reuse wood and plywood forming materials which contact concrete, except as follows:
1. High density plywood may be cleaned and reused for exposed concrete.
 2. Unfaced plywood may be reused for concealed concrete.
 3. Steel and fiberglass forming materials may be cleaned and reused.
- M. Patching and Repairs: Patch tie holes with sheet metal patches and restore forms to like new condition prior to reuse. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable.
- N. Form Removal: Do not remove concrete forms until concrete attains sufficient strength to support its own weight and all superimposed loads as determine by testing field cured concrete cylinders, but not sooner than specified in ACI 347, paragraph 3.6.2.3 or CBC Section 1906A.2. Load supporting forms may be removed when concrete has attained 75 percent of required 28 day compressive strength but no sooner than 3 days, provided construction is reshored. Vertical formwork for cast-in-place concrete walls may be removed no sooner than 1 day following concrete placement, provided that contractor can demonstrate that no sloughing or sagging of concrete will occur.
1. Reshore structural members as specified below because of design requirements or construction conditions to permit successive construction.
 2. Remove formwork progressively so unbalanced loads are not imposed on the structure.
 3. Avoid damage concrete surfaces during form removal.

4. Remove or snap off metal spreader ties inside wall surface. Cut nails and form ties off flush and leave surfaces level and clean.
 5. Store reusable forms for exposed architectural concrete to prevent damage to contact surfaces.
 6. Remove formwork in same sequence as concrete placement to achieve similar concrete surface coloration.
- O. Reshoring:
1. Minimum reshoring shall be as per the requirements of ACI 347. Reshoring of not less than half the full required shoring shall be added under last placed floor over which full shoring is to be placed for the next floor above. Leave reshoring in place for at least 7 days after the floor above is placed, but in no case remove reshoring until next concrete placing has attained a compressive strength equal to 66% of that required for the 28 day age as determined by control test cylinders specified hereinafter.
 2. Record: Maintain a form and shoring removal record.
 3. Contractor shall submit shoring/reshoring plans and calculations for review and approval. Calculations and plans shall be stamped and signed by a licensed civil or structural engineer in the State of California. Reshoring loads to the lower floors shall be consistent with the design loads specified in the construction documents and with the acquired strength of the lower floors based on the time they have been allowed to cure before being loaded.
- P. Shoring for Tributary Loads: Set temporary shoring for structural steel beams supporting cast-in-place concrete slabs. Such shoring is not required where beams are partially or totally encased with concrete nor for steel beams supporting concrete or masonry walls resting on the beams.

3.03 FORMWORK TOLERANCES:

- A. Deflection: Limit deflection of forming surfaces from concrete pressure to $L/240$.
- B. Finish Lines: Position formwork to maintain hardened concrete finish lines within following permissible deviations.
1. Variation from Plumb:

In 10'-0"	1/4 inch
In any story or 20'-0"	3/8 inch
In 40'-0" or more	3/4 inch
 2. Variation from Level or Grades Indicated

In 10'-0"	1/4 inch
In any bay or 20'-0" maximum	3/8 inch

In 40'-0" or more 3/4 inch

3. Cross-Sectional Dimensions

Minus 1/4 inch

Plus 1/2 inch

C. Building Lines: Variation of linear building lines from established position in plan and related position of columns, walls and partitions:

1. In any bay or 10'-0" maximum 1/2 inch

2. In 40'-0" or more 1 inch

D. Slab Openings: Variations in size and location of sleeves and slab openings shall not exceed 1/4 inch.

3.04 SURVEY AND ADJUSTMENT:

A. Check forms before and during placement of concrete, using an instrument, and make corrections as work proceeds.

3.05 EMBEDDED PIPING AND ROUGH HARDWARE:

A. Comply with 2007 CBC Section 1906A.3. Where work of other sections require openings for passage of pipes, conduits, ducts, and other inserts in the concrete, obtain all dimensions and other information. All necessary pipe sleeves, anchors, or other required inserts shall be accurately installed as part of the work of other sections, according to following requirements.

B. Openings: Size and locate formed openings, depressions, recesses and chases to accommodate products to be applied to, built into and pass through concrete Work. Coordinate size, location and placement of inserts, embedded products, openings and recesses with Work specified in other Sections.

C. Anchors and Other Devices: Set and build into concrete formwork anchorage devices and other embedded products required for Work to be attached to or supported by concrete elements.

D. Locating Embedded Products and Openings: Use setting drawings, diagrams, instructions and templates to set embedded products.

E. Conduits or Pipes: Locate so as not to reduce strength of concrete. In no case place pipes, other than conduits, in a slab 4-1/2" thick or less. Conduit buried in a concrete slab shall not have an outside diameter greater than 1/3 the slab thickness nor be placed below the bottom reinforcing steel or over top reinforcing steel. Space conduit a minimum of 5 diameters apart.

- F. Sleeves: Pipe sleeves may pass through slabs or walls if not exposed to rusting or other deterioration and are of uncoated or galvanized iron or steel. Provide sleeves of diameter large enough to pass any hub or coupling on pipe, including any insulation.
- G. Conduits: Conduits may be embedded in walls only if the outside diameter does not exceed 1/3 the wall thickness, are spaced no closer than 3 diameters on centers, and do not impair the strength of the structure.
- H. Clusters of Conduits:
 - 1. Clusters of conduits embedded in a concrete slab shall not exceed 6 conduits per cluster and each conduit per cluster shall be individually spaced as per the above requirements. Conduit clusters exceeding this requirement shall be reviewed and approved by the Structural Engineer of Record and DSA prior to the installation of the conduits.
 - 2. If more than one conduit cluster is required in a specific area of the slab, routing and spacing of the clusters shall be reviewed and approved by the structural engineer of record and DSA prior to the installation of the conduits.
 - 3. At no time shall the quantity and routing of clusters of conduits impair the strength of the concrete construction.

3.06 PATCHING:

- A. Schedule: Patch forming and tie holes immediately after form removal.
- B. Cleaning: Clean surface of all loose materials and soiling.
- C. Patching: Patch all holes and depressions with grouting gun and grout mix of one part cement and 2-1/2 parts mortar sand

3.07 FIELD QUALITY CONTROL:

- A. Inspection: Obtain inspection and approval of forms per 2007 CBC Table 1704A.4 Item 11 before placing structural concrete.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Reinforcing bars for cast-in-place concrete.
2. Reinforcing mesh for cast-in-place concrete.
3. Reinforcing Bars for masonry.
4. Accessories, including but not limited to, chairs and tie wires.
5. Miscellaneous concrete work, including but not limited to areaways, cast-in-place valve boxes, pits, splash blocks, equipment bases, and other items as shown or required to complete all Work.

B. Related Work Specified Elsewhere:

1. Concrete Formwork: Formwork for cast-in-place concrete; provisions for access for reinforcement Work, Section 03 10 00.
2. Cast in Place Concrete: Provisions for protection of reinforcement during concrete placement, Section 03 30 00.

1.02 REFERENCES, CODES AND STANDARDS: The following references, codes and standards are hereby made a part of this Section shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes adopted by the Governing Agency shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

- A. Specifications for Structural Concrete for Buildings – ACI 301.
- B. American Concrete Institute (ACI) – ACI 318, Building Code Requirements for Reinforced Concrete.
- C. American Concrete Institute (ACI) – 315, “Manual of Standard Practice for Detailing Reinforced Concrete Structures”.
- D. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice.

- E. CRSI 63 - Recommended Practice for Placing Reinforcing Bars.
- F. CRSI 65 - Recommended Practice for Placing Bar Supports, Specifications and Nomenclature
- G. American Welding Society (AWS) – AWS D1.4, D1.12 “Structural Welding Code.”
- H. International Building Code with State of California amendments.

1.03 SUBMITTALS:

- A. Timing: Allow a minimum of two weeks for review of submittals.
- B. Shop Drawings: Submit including complete layouts, sections, and details for congested conditions, typical bending diagrams and offsets, splice lengths and locations, proposed layout where vertical and horizontal bars intersect, and wherever welding is proposed, detailed to conform to AWS and CBC requirements. After approval of initial submission, subsequent submittals may be waived.
- C. Product Data:
 - 1. Reinforcement supporting and spacing devices at exposed concrete only, to demonstrate non-corroding and non-staining characteristics.
 - 2. Adhesive compounds.
- D. Certifications: If steel is to be welded, submit certifications signed by AWS Certified Welding Inspector (CWI) of prequalified welding procedures, qualifications of welding procedures unless prequalified, qualification of welding operators, and qualification of welders.
- E. Chemical Analysis: Provide for bars to be welded, in accordance with CBC Table 1704A.4, 1903A.4 and ACI 318 3.5.2

1.04 QUALITY ASSURANCE:

- A. Source Quality Control: Refer to Section 01 40 00 for general requirements and to following paragraphs for specific procedures. Testing Laboratory shall perform following conformance testing, shall select test samples of bars, ties, and stirrups from the material at the site or from place of distribution, each sampling including at least two 18" long pieces, and perform the following tests in accordance with CBC Section 1916A.2, ASTM 615 and ASTM A706.
 - 1. Identified Bars: If samples are obtained from bundles as delivered from the mill, identified as to heat number, accompanied by mill analyses and

mill test reports, and properly tagged with Identification Certificate so as to be readily identified, perform one tensile and one bend test for each 10 tons or fraction thereof of each size of bars. Submit mill reports when samples are selected.

2. Unidentified Bars: When positive identification of reinforcing bars cannot be made and when random samples are obtained, perform tests for each 2.5 tons or fraction thereof, one tensile and one bend test from each size of bars.
- B. Qualification of Welds, Welding Operators, and Welders: Comply with applicable Building Code standard. Perform welding procedure qualification, except for prequalified procedures, as required by AWS D1.4, prior to executing any welding of reinforcing steel.
1. Only AWS Certified Welding Inspectors shall be used for tests and qualifications associated with welding of reinforcing steel.
 2. Only AWS qualified welders or welding operators shall perform welding of reinforcing steel.
- C. Welding of reinforcing shall be in conformance with AWS & CBC. Do not weld reinforcing without approval of the structural engineer.
- D. Install reinforcing in accordance with ACI 318, CRSI & CBC.
- E. Coordination: Coordinate Work specified in this Section with other Sections which require placement of embedded products and provision of openings and recesses. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Architect (Structural Engineer) before proceeding

1.05 MARKING AND SHIPPING:

- A. Bundle bars, tag with identification, and transport and store so as not to damage any material. Use metal tags indicating size, length and other marking shown on placement drawings. Maintain tags after bundles are broken.

1.06 EXTRA MATERIAL:

- A. Provide and install an additional 2% of the total rebar quantity for the project in addition to the quantities shown on drawings. This additional steel shall be installed during construction, in sizes and locations as directed. Provide unit price

for purpose of adjusting contract price to reflect quantity of extra material actually used. All unused material shall be credited to the owner based upon the agreed unit prices.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Reinforcing bars: ASTM A615, Grade 60, unless otherwise indicated on drawings.
- B. Reinforcing bars for welding: ASTM A706, Grade 60.
- C. Welded steel wire fabric conforming to ASTM A185 or A497 as indicated on the structural drawings.
- D. Shear studs:
 - 1. Low carbon steel, C1015 in accordance with ASTM-A108.
 - 2. Yield strength – 50,000 psi minimum.
 - 3. Tensile strength – 60,000 psi minimum.
 - 4. Elongation in 2” – 20% minimum.
 - 5. Reduction of area – 50% minimum.
- E. Rails: Low carbon steel, type 44W. Shear studs shall be attached to rails by arc welding.
- F. Studwelding method in accordance with AWS D1.1.
- G. Tie wire: ASTM A82, Annealed copper-bearing steel, 16 gauge minimum.
- H. Chairs and similar support items:
 - 1. Chairs, Bolsters, Bar Supports and Spacers: Wire-bar-type devices, complying with CRSI Manual of Standard Practice, for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Provide size and shape as required for strength and support of reinforcement during reinforcement installation and concrete placement.
 - a. Supports at Slab on Grade: Provide devices with load-bearing pads or horizontal runners where base material will not support chair legs, to prevent puncture of vapor retarder or provide precast concrete block bar supports of equal or greater strength to specified concrete.
 - b. Corrosion Resistance:
 - i. Provide plastic coated, plastic-tipped (CRSI, Class 1) or stainless steel types at exposed-to-view concrete surfaces.

ii. Provide only stainless steel (CRSI Class 2) at exterior exposed surfaces to be painted.

- I. Welding electrodes: AWS D1.4, Table 5.1 and 5.5 low hydrogen electrodes, E9018 for Grade 60 steel, E70XX Series for grade 40 steel.
- J. Mechanical Couplers or Splice Devices: Lenton, Barlock, Cadweld.

2.02 FABRICATION OF REINFORCING BARS:

Do not fabricate reinforcing bars until reinforcing bar shop drawings have been reviewed for general conformance by the Architect.

- A. Comply with CRSI Manual of Standard Practice for Reinforced Concrete Construction for fabrication of reinforcing steel.
- B. Bending and Forming: Fabricate bars of the indicated sizes and bend and form to required shapes and lengths by methods not injurious to materials. Do not heat reinforcement for bending. Bend bars No. 6 size and larger in the shop only. Bars with unscheduled kinks or bends are subject to rejection. Use only tested and approved bar materials.
- C. Welding: Use only ASTM 706 steel where welding is proposed. Perform welding, where shown or approved, by the direct electric arc process in accordance with AWS D1.4 using specified low-hydrogen electrodes. Preheat 6" each side of joint. Protect joints from drafts during the cooling process; accelerated cooling is prohibited. Do not tack weld bars. Clean metal surfaces to be welded of all loose scale and foreign material. Clean welds each time electrode is changed and chip burned edges before placing welds. When wire brushed, the completed welds must exhibit uniform section, smooth welded metal, feather edges without undercuts or overlays, freedom from porosity and clinkers, and good fusion and penetration into the base metal. Cut out welds or parts of welds found defective with chisel and replace with proper welding. Prequalification of welds shall be in accordance with Code. No welds shall be made at bends in reinforcing bars. Prequalification of welds shall be in accordance with AWS D1.4.
- D. Galvanizing: Hot-dip galvanize fully completed reinforcing assemblies in accordance with ASTM A123 where indicated.

PART 3 - EXECUTION

3.01 INSTALLATION OF REINFORCING:

- A. Provide additional reinforcing bars at wall and slab openings as required. Before placing bars, and again before concrete is placed, clean bars of loose mill scale, oil, or any other coating that might destroy or reduce bond.
- B. Securing in Place: Accurately place bars and wire tie in precise position where bars cross. Bend ends of wire ties away from the forms. Wire tie bars to corners of ties and stirrups. Support bars according to the current edition of "Recommended Practice for Placing Bar Supports" of Concrete Reinforcing Steel Institute, using approved accessories and chairs. Place precast concrete cubes with embedded wire ties to support reinforcing steel bars in concrete placed on grade and in footings. Use care not to damage vapor barriers where they occur.
- C. Coordination: Locate reinforcement to accommodate embedded products and formed openings and recesses.
- D. Clearances: Maintain minimum clear distances between reinforcing bars and face of concrete as indicated on plans or directed.
- E. Splices: Do not splice reinforcing bars at the points of maximum stress except where indicated. Lap splices as shown or required to develop the full strength or stress of bars. Stagger splices in horizontal wall bars at least 24" longitudinally in alternate bars and opposite faces.
- F. Splice Devices:
 - 1. Type and manufacture, noted on drawings. If substitution is requested, Contractor shall supply manufacturer calculations, supporting data and ICC ER reports showing proposed substitution conforms to requirements indicated and supplied.
 - 2. Install in accordance with manufacturer's written instructions.
 - 3. Splice in a manner developing at least 125% of the yielding strength of the bar.
- G. Slab on Grade Reinforcement: Do not displace or damage vapor retarder at slab on grade.
- H. Wire Fabric Placement: Place fabric in sheets as long as practical, lapping adjoining pieces at least one full mesh plus 2", 9", or 1.5ld, whichever is greater and tie with 16 gage wire. Offset end laps in adjacent widths to prevent continuous laps. Extend fabric to within 1-inch of edge at slabs on grade. Cut mesh at expansion joints and full depth control joints.

- I. Dowels: Secure tie dowels in place before depositing concrete. Provide No. 3 bars for securing dowels where no other reinforcement is provided
- J. Field Welding of Bars: As specified for fabrication.
- K. Maintaining Bars In Position: Take adequate precautions to assure that reinforcing position and spacing is maintained during placement of concrete.
- L. Adjustment and Inspection: Do not bend or straighten reinforcement in a manner injurious to material. Do not use bars with kinks or bends not shown on Drawings and reviewed shop drawings, or bars with reduced cross-section due to corrosion or other cause.

3.02 FIELD QUALITY CONTROL:

- A. Supervision: Perform work to this section under the supervision of a capable superintendent.
- B. Inspection: Obtain inspection and approval of reinforcing before concrete is placed.
- C. Welding Inspection. Whether welding is done in the shop or at the site, perform welding of reinforcing bars under inspection of the Testing Laboratory Welding Inspector. All reinforcing welding shall have continuous inspection.
- D. Notify structural engineer approximately 48 hours prior to completion of placement.

3.03 CORRECTIONS DURING CONCRETE PLACEMENT:

- A. Corrections During Concrete Placement: Maintain reinforcing steel workers during placement of concrete for resetting reinforcement displaced by runways, workers and other causes.

3.04 DEFECTIVE WORK:

- . Defective Reinforcement Work: The following shall be considered defective and may be ordered to be removed and reconstructed at no change in Contract Time or Sum.
 - 1. Bars with kinks or bends not shown on Drawings.
 - 2. Bars injured due to bending or straightening.
 - 3. Bars heated or bent.

4. Reinforcement not placed in accordance with Drawings and Specifications.
5. Rusty or oily bars.
6. Bars exposed in surface of concrete.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes:

1. Furnishing, placing, patching, and initial curing of cast-in-place concrete unless otherwise specified.
2. Grout and drypack, except as otherwise specified.
3. Placing of embedded anchor bolts and inserts.
4. Vapor barrier under interior floor slabs on grade.
5. Finishing and final curing of cast-in-place concrete.
6. Waterstops including testing.
7. Miscellaneous concrete work, including but not limited to areaways, cast-in-place valve boxes, pits, splash blocks, equipment bases, and other items as shown or required to complete all Work.
8. Slurry concrete.

B. Related Work Specified Elsewhere:

1. Preparation and grading of earth subgrade under concrete, Section 31 22 00.
2. Portland Cement Concrete Paving: Concrete for pedestrian and vehicular traffic, Section 32 13 00.
3. Furnishing, erection, and removal of forms, Section 03 10 00.

4. Furnishing and placing reinforcing for cast-in-place concrete, Section 03 20 00.

1.02 REFERENCES, CODES AND STANDARDS: The following references, codes and standards are hereby made a part of this Section work shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes adopted by the Governing Agency shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

- A. ACI 117 – Standard Specifications for Tolerances for Concrete Construction and Materials.
- B. ACI 211.1 Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
- C. ACI 301 Specifications for Structural Concrete for Buildings.
- D. ACI 302.1 – Recommended Practice for Concrete Floor and Slab Construction.
- E. ACI 304 Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- F. ACI 304.2 Placing Concrete by Pumping Methods.
- G. ACI 305 Hot Weather Concreting.
- H. ACI 306 Cold Weather Concreting.
- I. ACI 308 – Recommended Practice for Curing Concrete.
- J. ACI 309 Standard Practice for Consolidation of Concrete.
- K. ACI 315 Details and Detailing of Concrete Reinforcement.
- L. ACI 318 Building Code Requirements for Reinforced Concrete.
- M. ACI 347 Recommended Practice for Concrete Formwork.
- N. AWS D1.4 Structural Welding Code – Reinforcing Bars.
- O. NRMA Concrete Plant Standards and Truck Mixer and Agitator

Standards.

- P. CRSI Placing Reinforcing Bars.
- Q. “Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion” (Guideline No. 03730) International Concrete Repair Institute.
- R. “Guide for Selecting Application Methods for Repair of Concrete Surfaces” (“Guideline No. 03731) International Concrete Repair Institute.
- S. International Building Code with State of California Amendments (CBC).

1.03 SUBMITTALS:

- A. Allow a minimum of two weeks for review of submittals.
- B. Shop Drawings: Submit for structural concrete and concrete slabs showing dimensioned locations, types of construction and expansion joints, and method of keying. Allow a minimum of two weeks for review of submittals.
- C. Mix Designs: Submit mix designs for review and approval. Allow a minimum of two weeks for review of submittals. Also refer to Section 1.05.
- D. Product Data: Proprietary admixtures, curing compounds, hardeners and sealers.
 - 1. Indicate compatibility of curing compounds and floor sealer with bond breaker for tilt-up concrete and finish materials to be applied to concrete.
 - 2. Indicate compatibility of curing compounds, hardeners and sealers with materials used for installation of applied flooring
- E. Product Data: Submit the coloring admix manufacturer's technical data for products, methods, and color control procedures.
- F. Certificates: Certify that materials meet requirements of paragraph "Quality Assurance".
- G. Delivery Tickets: With each transit truck, provide delivery ticket, signed by an authorized representative of the batch plant, containing all information required by

ASTM C94, as well as time batched, type and brand of cement, cement content, maximum size of aggregate and total water content.

1.04 QUALITY ASSURANCE:

- A. Compliance with Regulations: All materials shall comply with the current rules and regulations of the local air quality management district, with the rules regarding volatile organic compounds, and with FDA rules and regulations for dangerous substances in construction products.
- B. Concrete Manufacturer: Furnish concrete from licensed commercial ready-mix concrete plants conforming to ASTM C94 and approved by Building Official. Requirements herein govern when exceeding ASTM C94.
- C. Allowable Tolerances: Construct concrete conforming to the tolerances specified in ACI 117 "Recommended Tolerances for Concrete Construction and Materials", as applicable, unless exceeded by requirements of regulatory agencies or otherwise indicated or specified.
- D. Testing Agency Services: Owner will engage an independent testing and inspection agency to conduct tests and perform other services specified for quality control during construction.
- E. Source Quality Control: Refer to the following paragraphs for specific procedures. Concrete materials which, by previous tests or actual service, have shown conformance may be used without testing when so approved by the Architect and Building Official. Testing Laboratory shall perform following conformance testing.
 - 1. Portland Cement: Furnish Certificate of Compliance in accordance with 2007 CBC Section 1916.1 and acceptable to Architect and Building Official, showing conformance with requirements specified; otherwise, the Testing Laboratory shall test each 250 barrels of cement in accordance with ASTM C150.
 - 2. Aggregate For Normal Weight Concrete: Test the aggregate before and after concrete mix is designed and whenever character of aggregate varies or source

of material is changed. Include a sieve analysis. Obtain samples of aggregates at the dry batching or ready-mix concrete plant in accordance with ASTM D75 and perform tests for the properties listed in the following table:

PHYSICAL PROPERTIES		
Physical Properties, units	Test Method	Minimum values
Sieve analysis	ASTM C136	Per ASTM C33 Sectopm 6 for fine aggregate and Table 2 for coarse aggregate.
Organic impurities	ASTM C40	Fine aggregate not darker than reference standard color
Soundness	ASTM C88	Loss after 5 cycles not more than 8 percent of coarse aggregate, nor more than 10 percent of fine aggregate
Abrasion	ASTM C131	For coarse aggregate weight loss not more than 10.5 percent after 100 revolutions, 42 percent after 500 revolutions
Deleterious materials	ASTM C33	Per ASTM C33 Table 1 for fine aggregate and Table 3 for coarse aggregate
Materials finer than No. 200 sieve	ASTM C117	Not over 1 percent for gravel, 1.5 percent for crushed aggregate

Reactivity potential	ASTM C227, C289, C342	Ratio of silica released to reduction in alkalinity not to exceed 1.0. See 2007 CBC Section 1903.3
Sand equivalent	ASTM D2419	California sand equivalent values operating range not below 71 percent

F. Color Control for Integrally-Colored Concrete: Coloring admix and color control procedures of the L. M. Scofield Company, Los Angeles, California, or of Admixtures, Inc., Irwindale, California are specified to establish the standard of quality for all integrally colored concrete. Color admix manufacturer shall furnish the services of his technical representatives equipped with wet-batch color control test devices at ready-mix plant and site as required to assure concrete of uniform color matching approved Samples, at no extra cost.

1.05 CONCRETE MIX DESIGNS: Testing Laboratory shall design concrete mixes for concrete requiring 28-day compressive strength exceeding 2,500 psi. Contractor shall bear all costs for concrete mix designs. All mix designs shall be signed and sealed by a Civil Engineer registered in the State of California.

A. Strength Requirements: Design mixes for structural concrete for minimum 28-day compressive strengths required by Drawings and Specifications. All mix designs for structural concrete shall be proportioned in accordance with Section 3.9 of ACI 301. If trial batches are used, the trial batch strength for each mix shall exceed indicated or specified strength by an amount based on the standard deviations of strength test records according to ACI 318-05 Section 5.3.2

B. Normal Weight Concrete Mix Designs: Design all mixes for workability and

- durability of concrete. Control the mixes in accordance with 2007 CBC Section 1905A.1.1, ACI 211.1, "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete", and ACI 318-05, Chapter 4. Make adjustments in cement content required for concrete strengths at Contractor's expense and do not exceed 0.50 absolute water-cement or cement plus flyash ratio by weight. Do not use calcium chloride or any admix containing such material. Admixtures containing a material releasing nitrates in solution are limited to 0.06 percent by weight for the chloride ion.
- C. Maximum Aggregate Sizes: Not exceeding 3/4 of minimum clear space between bars and between bars and forms, nor larger than 1/5 of least dimensions between the forms. Design the mixes with 3/4" maximum size, except maximum 1-1/2" size for foundations and maximum 3/8" size at congested reinforcing or thin sections, when approved by the Architect.
 - D. Air Content: All formed normal weight concrete shall contain an air-entraining agent producing air content of 3.5% to 6.5% by volume and adjusted for weather conditions. All interior slabs shall have a maximum air content of 3 percent.
 - E. Pumped Concrete: Design concrete mixes specifically for pump placing with dry loose volume of fine aggregates not more than 47 percent of total aggregates.

1.06 DELIVERY, STORAGE, AND HANDLING:

- A. Deliver all materials in timely manner to ensure uninterrupted progress of the Work.
- B. Store materials by methods that prevent damage and permit ready access for inspection and identification.
- C. Runoff: Prevent run off of water contaminated by construction agents and chemicals from soiling existing surfaces and from contaminating existing and future landscape areas.

1.07 PROJECT SITE CONDITIONS:

- A. Do not place concrete during rain or adverse weather conditions without means to prevent all damage. Conform to requirements specified hereinafter whenever

concrete placement is required during cold or hot weather.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Portland cement: ASTM C150, Type II, low alkali, or Type V when in contact with soils. Do not change brand or source without prior approval.
- B. White Portland cement: ASTM C150, Type I, from one approved source. Use for integrally-colored concrete.
- C. Aggregates:
 - 1. Standard weight aggregates: ASTM C33-03, from approved pits, free from vegetable matter and of opaline, feldspar, or siliceous magnesium substances; all washed, clean, hard, fine-grained sound crushed rock or gravel; not over 5 percent by weight of flat, thin, elongated, friable, or laminated pieces (pieces having major dimension over 5 times average dimension) or more than 2 percent by weight of shale or cherty material.
 - 2. Lightweight aggregates: ASTM C330-05, Ridgelite, Rocklite, or equal, approved kiln expanded shale having fire sealed surface, coarse aggregate not produced by crushing, dry loose weight maximum 38 pcf, maximum 3/4" size, vacuum or thermally fully saturated for pumped concrete. The absolute volume of coarse aggregate in concrete mix not exceeding 8.8 cubic feet. Option: Approved pumice with pea gravel mix.
- D. Admixtures:
 - 1. Chemical (Water Reducing) Admixture: ASTM C494, Type A, D, or E. Only one brand. When used, are subject to approval of Architect, and must reduce the mixing water at least 10 percent without entraining air in excess of 2 percent by volume. If the water reducing agent entrains more than 2 percent air, the water reduction shall be at least 12 percent, but in no case shall the water reducing agent entrain air in excess of 4 percent.

2. Air-entraining admix: ASTM C260.
 3. Pozzolan: ASTM C618, Class F or C Fly Ash, 100 pounds maximum per cubic yard, containing 1 percent or less carbon. Fly ash shall not be used in excess of 20 percent by weight of total cement quantity.
 4. Super-Plasticizers (High Range Water Reducers): ASTM C494, Type F or G. Master Builders "Rheobuild", Euclid "Eucon 37" or equal, capable of producing concrete which can be placed at 6-8 inch slump without segregation, capable of maintaining slump within 2" of that initially mixed for 90 minutes, and of maintaining concrete temperature within 2 degrees F. from time of batching for 90 minutes minimum.
 5. Color Admixture: L.M. Scofield Company "Chromix", "Colorfull Concrete Color" by Admixtures, Inc., Irwindale, Calif., both standard and retarder types as required for the field placing conditions, or prior approved equal.
- E. Water: From potable domestic source.
- F. Curing Materials:
1. Curing, Hardening and Sealing Materials, General: Provide materials suitable for concrete finish and not detrimental to materials to be applied to concrete. Materials shall be compatible with concrete admixtures, shall be recommended by manufacturer for intended use and shall comply with applicable air quality requirements of authorities having jurisdiction
 2. Liquid Curing compound: ASTM C309, Type I, Class B, W.R. Meadows 1100 Series, Master Builders "Masterkure-N-Seal W", or equal, complying with Rule 1113 of the South Coast Air Quality Management District and Federal Air Quality Regulation 40 CFR 52.254.
 3. Curing sheet: ASTM C171, non-staining white types.
 4. Curing, Hardening and Dustproofing Compound: Sonneborn Sonosil, water-based inorganic silicate-base compound, to cure, harden and dustproof concrete, VOC-compliant.

5. Surface Hardening and Dustproofing Compound: Sonneborn Lapidolith concrete hardening compound, chemically-active solution which interacts with free lime in concrete to form dense, impervious wearing surface, VOC-compliant.
- G. Vapor barrier: ASTM D2103, polyethylene sheeting, clear, 10 mil thickness, impact strength greater than 70 grams per mil, 10' minimum width. Provide minimum 2" wide waterproof plastic self-adhering tape for sealing edges and ends of sheeting. Material shall be Rufco 400 by Raven Industries, Moistop by Fortifiber Corp, Nervastral Barrier by Rubber and Plastics Compound Co., or Vinyl Water Barrier by B.F. Goodrich Corp.
- or
- H. Vapor barrier: Griffolyn T105, white, 7 ply, high density polyethylene and nylon yarn laminate, manufactured by Reef Industries, Inc., P.O. Box 750250, Houston TX 77275 (800) 231-6074, FAX (713) 947-2053. The material shall have a reinforced non-woven grid suspended in a permanently flexible adhesive media. The material shall have tear strength of not less than 25 pounds when tested according to ASTM D2582. Tape for joining sheets, repairing punctures, and for bonding vapor barrier to projections through the membrane shall be double sided "Fab Tape or single sided, pressure sensitive "Griff Tape" as applicable.
- (for lighter weight, use T-65, 3 ply tear strength 15 pounds)
- I. Non-shrink grout: Conform to Corps of Engineers CRC-C 621, ASTM C1107 and as follows:
6. Metallic for concealed areas: Master Builders "Embeco 885", or equal, non-gas-forming and free of oxidizing catalyts and inorganic accelerators, used as dry or damp pack, or mixed to a 20-second flow, without segregation or bleeding at any temperature between 45 degrees F and 100 degrees F. Working time 30 minutes or more.

7. Non-metallic for exposed areas: Master Builders "Masterflow 928", or Euclid "Euco Hi-Flow Grout". with same characteristics as specified for concealed areas.
8. Epoxy grout where indicated: Multi-component, premeasured, fast-curing combination of thermosetting resins and inert fillers, Master Builders "Masterflow 648CP Plus", Sikadur 42 Industrial Group-Pak by Sika Chemical Corporation, or Euclid "Euco High Strength Grout".
- J. Drypack: Field mixture of 1 part Portland cement to 2 parts fine aggregate mixed to a damp consistency such that a ball molded in the hands will stick together and hold its shape. At Contractor's option, the specified admixture may be added for increased workability at lower water/cement ratio. In lieu of field mixing, Contractor may use factory mixed drypack material, such as Master Builders "Set Grout" or Euclid "Euco Dry Pack Grout".
- K. Waterstops: Williams Product Inc. "Efficiency Waterstops", Gates Rubber Co. "Kwik-Seal Waterstops", Electrovert Inc. "Durojoints" or "Duroseal", or approved equal, neoprene or polyvinyl chloride types shown, joints per manufacturer's directions. For walls, flat ribbed type, minimum 6" width by 3/8" thick at center with minimum 7 ribs each side of each flange. For slabs, ribbed center bulb type, minimum 9" wide by 3/8" thick next to bulb, minimum 9 ribs on each side of each flange, bulb minimum 1/2" ID and 7/8" OD.
- L. Expansion Joint Filler: Asphalt impregnated fiber or non extruding foam type, conforming to ASTM D1751 and D1752, W.R. Meadows "Sealtight", or equal.
- M. Construction Joint Materials: "Key-Kold" or "Kwik-Joint", of profiles indicated.
- N. Bonding Agent: "Weld-Crete", manufactured by Larsen Products Co., P.O. Box 2127, Rockville, MD 20852, Master Builders "Concresive", or equal.

2.02 CONCRETE MIXING:

- A. Furnish ready-mixed concrete from an approved commercial off-site plant. Conform to ASTM C94, except materials, testing, and mix designs as specified herein. Use transit mixer trucks equipped with automatic devices for recording

number of revolutions of drum. Comply with 2007 CBC Section 1905

- B. Admixtures: All approved admixtures shall be introduced into the concrete at the batch plant. Field additions are not acceptable.
- C. Slump: Adjust quantity of water so concrete at point and time of placing does not exceed the following slumps when tested according to ASTM C143. Use the minimum water necessary for workability required by part of structure being cast.

SLUMP AND WATER/CEMENT RATIOS		
Part of Structure	Maximum Slump Inches*	Maximum Water-Cement Ratio
Footings, foundation walls, and mass concrete, not reinforced	4	0.45
Slabs on grade, reinforced and non-reinforced	4	0.45
Reinforced concrete over 8" thick	4	0.5
Reinforced concrete 8" or less thick	4	0.45
All other concrete	4	0.5

*If super-plasticizers are used, slumps may be 6"-8" for all concrete, with water-cement ratio unchanged or lower than slumps without admixture.

2.03 SPECIAL REQUIREMENTS FOR COLORED CONCRETE:

- A. Cement for the entire project shall be same type and brand, and from the same mill. Aggregate, both fine and coarse, shall be supplied from one source. Mix

design shall remain constant for all colored concrete. Slump shall not exceed 4".

- B. Mixers transporting concrete shall be thoroughly cleaned prior to loading colored concrete.
- C. Pigments shall be added to mix at the plant, and shall be measured accurately. The mixer shall be operated at charging speed for 5 to 10 minutes while color is being added.

2.04 SLURRY CONCRETE:

- A. Slurry concrete shall conform to requirements of this section for regular concrete, except that testing will not be required. Slurring concrete shall contain not less than 2 sacks of cement per cubic yard. Aggregate may be material selected from excavation, free from organic matter, or imported fill, conforming to the following gradation:

Sieve Size	Percent passing
1-1/2"	100
1"	80 - 100
3/4"	60 - 100
3/8"	50 - 100
No. 4	40 - 80
No. 100	10 - 40

- B. Water shall be added to produce a fluid, workable mix that will flow and can be pumped without segregation of aggregate. Materials shall be mechanically mixed

until the cement and water are thoroughly dispersed.

PART 3 - EXECUTION

3.01 PREPARATION FOR CONCRETE PLACING:

- A. Remove all free water from forms before concrete is deposited. Remove hardened concrete, debris, and foreign materials from interior surfaces of forms, exposed reinforcing, and from surfaces of mixing and conveying equipment.
- B. Wetting: Wet wood forms sufficiently to tighten up cracks. Wet other materials sufficiently to reduce adsorption and to help maintain concrete workability.
- C. Earth Subgrade: Dampen 24 hours before placing concrete, but do not muddy. Re-roll where necessary for smoothness and remove loose material.
- D. Gravel Fill: Recompact disturbed gravel and bring to correct elevation.
- E. Sand Beds or Subslab Drainage Fill: Recompact disturbed material and bring to correct elevation.
- F. Vapor Barrier: Install under interior floor slabs on grade. Lap joints 6" in the direction of concrete spreading and tape seal. Seal the joints at walls and around penetrations with tape. Cover barrier with 2" layer of clean damp sand.
- G. Screeds: Set screeds at walls and maximum 8-foot centers between. Set to provide level floor. Check with an instrument level, transit, or laser during placing operation to maintain level floor.
- H. Screeds Over Vapor Barrier: Use weighted pad or cradle type screeds and do not drive stakes through the vapor barrier. Check with an instrument level, transit, or laser.
- I. Expansion Joint Filler: Install where slabs abut buildings and elsewhere as indicated. Install full depth of concrete with top level with finished surface of concrete.

3.02 CONCRETE PLACING:

- A. Conveying and Placing: Comply with ACI 304. Do not place concrete until the reinforcing steel, embedded items, forms, or metal decking have been approved. Do not use aluminum tubes or any aluminum equipment for pumping concrete, nor allow concrete to free fall from its point of release at mixer, hoppers, tremies, or conveying equipment more than 5 feet for concealed concrete and 3 feet for exposed concrete. Deposit concrete in 18" maximum lifts within 90 minutes after water is first added to the batch and so that the surface is kept level throughout, a minimum being permitted to flow from one portion to another. Place concrete by methods that prevent segregation of materials.
1. Where new concrete is placed against or on old or existing concrete, apply bonding agent to properly prepared surface of old concrete prior to placement of new concrete. Prepare surface in accordance with ICRI.
 2. Exception: When using super-plasticizers, the free fall, horizontal layer thickness and time limitations may be doubled.
- B. Placement in Forms: Limit horizontal layers to depths which can be properly consolidated, but in no event greater than 24 inches.
1. Consolidate concrete by means of mechanical vibrators, inserted vertically in freshly placed concrete in a systematic pattern at close intervals. Penetrate previously placed concrete to ensure that separate concrete layers are knitted together.
 2. Vibrate concrete sufficiently to achieve consistent consolidation without segregation of coarse aggregates.
 3. Do not use vibrators to move concrete laterally.
- C. Protection: Ensure that reinforcement, embedded products, joint fillers and joint devices are not disturbed during concrete placement.
- D. Joints In Concrete: Locate construction joints only where approved, and obtain prior approval for points of stoppage of any pour. Clean and roughen the surface of construction joints by removing the entire surface and exposing 1/4" amplitude of clean aggregate solidly embedded in mortar matrix by sandblasting, chipping,

use of an approved surface retarder, or equal. Water and keep hardened concrete wet for not less than 24 hours and slush with Portland cement slurry just before placing joining concrete. Cover horizontal surfaces of existing or previously placed and hardened concrete with a 2" thick layer of fresh concrete less 50% of coarse aggregate just before balance of concrete is placed.

- E. Vertical Elements: Stop placement of concrete in walls and columns 1-1/2" below bottom of beams or supported slabs. Stop placement at sills and heads of wall openings in the same manner. Allow concrete in vertical elements to be in place at least 2 hours and until vertical settlement has ceased before placing concrete for floor framing.
- F. Compacting: Compact each layer of the concrete as placed with mechanical vibrators or equivalent equipment. Transmit vibration directly to concrete and in no case through the forms unless approved. Accomplish thorough compaction. Supplement by rodding or spading by hand adjacent to forms. Compact concrete into corners and angles of forms and around reinforcement and embedded fixtures. Recompact deep sections with congestion due to reinforcing steel as required.
- G. Operation of Vibrators: Do not horizontally transport concrete in forms with vibrators nor allow vibrators to contact forms or reinforcing. Push vibrators vertically into the preceding layers that are still plastic and slowly withdraw, producing maximum obtainable density in concrete without creating voids or segregation. In no case disturb concrete that has partially set. Vibrate at intervals not exceeding two-thirds the effective visible vibration diameter of the submerged vibrator. Avoid excessive vibration that causes segregation. Use and type of vibrators shall conform to ACI 309 "Recommended Practice for Consolidation of Concrete".
- H. Correction of Segregation: Before placing next layer of concrete, and at the top of last placement for vertical elements, remove concrete containing excess water or fine aggregate or showing deficiency of coarse aggregate and fill the space

with compacted concrete of correct proportions.

- I. Waterproof Membranes: Perform work adjacent to waterproof membranes to prevent damage to membranes. Arrange work so that membrane is left unprotected for minimum period of time, as approved. Prior to placing concrete, inspect the membrane and arrange for repair to all damage which may have occurred.
- J. Concrete Encased Columns: Clean columns as specified for cleaning other steel in contact with concrete. When concrete is not carried to structure above, stop concrete perpendicular to column axis at the same elevation on all parts of all columns in the space. Float top neatly to column.
- K. Slabs:
 - 1. Float Finish: Place, consolidate, strike off and level concrete slab to proper elevation. Use highway straightedge, bull float or darby. Remove all bleed water. After the concrete has stiffened sufficiently to permit the operation, and water sheen has disappeared, the surface shall be floated, at least twice, to a uniform sandy texture. Remainder of finishing operations shall be as specified in Section 03345 for each type of surface.
 - 2. On-Grade Slabs: Place with maximum 40-foot edge dimension. Generally locate joints on column lines, exact locations as directed or approved.
 - 3. On-Grade Slab Construction and Contraction Joints: Use types as indicated at column lines intermediate locations.
 - 4. Expansion Joints: Conform to details and approved submittal. Provide expansion joint filler finished flush with slab surface except for those joints shown to be sealed with sealant. Conform to Section 07920 where sealant sealed joints are shown or specified, including the polymer joint filler, backing, and bond breaker.
 - 5. Control Joints: Provide for concrete slabs as indicated. At Contractor's option, "Soff-Cut" saw may be used to depth of 1-1/4" immediately providing spalling or undercutting of the concrete does not occur, and in no case shall

slab reinforcement be cut or damaged. Conventional saws shall be used as soon as possible without dislodging aggregate to 1/4 slab thickness. Complete sawing of joints within 12 hours after finishing is completed. If early sawing causes undercutting or washing of the concrete, delay the sawing operation and repair the damaged areas. The saw cut shall not vary more than 1/2 inch from the true joint alignment. Discontinue sawing if a crack develops ahead of a saw cut. Immediately after each joint is sawed, thoroughly clean the saw cut and adjacent concrete surface. Respray surfaces treated with curing compound which are damaged during the sawing operations as soon as the water disappears. Protect joints in a manner to prevent the curing compound from entering the joints.

3.03 COLD WEATHER PROVISIONS:

- A. Conform to ACI 306 and the following requirements.
- B. Normal Concrete: When the temperature is below 40 degrees F. the temperature of the concrete placed in the forms shall be at least 60 degrees F. When the temperature is below 30 degrees F. the temperature of the concrete as mixed shall be 65 degrees F. In all cases, when the daily average temperature is below 40 degrees F. the concrete shall be kept at 55 degrees F. for the 72 hours and then allowed to drop uniformly to the air temperature over the next 24 hours.
 - 1. Concrete temperature shall be measured by placing a thermometer 2" from the top of the concrete being placed.
- C. Air-entrained concrete shall be kept at the above temperature for 27 hours and above freezing for an additional 72 hours.
- D. No calcium chloride shall be used to accelerate hardening of concrete. Contractor to certify that any additive used does not contain calcium chloride.
- E. If low temperature accelerating admixture is proposed, adjust concrete mix as required and obtain approval of Architect.

- F. All concrete materials, reinforcement, forming materials and ground with which concrete is to come in contact shall be free of frost.
- G. The covering or other protection used in connection with the curing shall remain in place and intact for at least 24 hours.
- H. The work shall be protected from the elements, flowing water, and defacements of any nature during the construction operations.
- I. Conform to the provisions of A.C.I. 306, Recommended Practice for Cold Weather Concreting, except as modified herein.

3.04 HOT WEATHER PROVISIONS:

- A. Conform to ACI 305 and the following requirements.
- B. Take extra care to reduce the temperature of the concrete being placed, and to prevent rapid drying of newly placed concrete. When the outdoor ambient temperature is more than 90 degrees F., shade the fresh concrete as soon as possible after placing, and start curing as soon as the surface of the fresh concrete is sufficiently hard to permit it without damage. Using retarding admixture at 85°F or higher.
- C. Concrete placement temperatures shall be controlled by the Contractor and shall not be limited to
 - 1. Shading and cooling the aggregate;
 - 2. Avoiding use of hot cement;
 - 3. Cooling mixing water by additions of ice;
 - 4. Insulating water supply lines and tanks; and
 - 5. Insulating mixer drums or cooling them with sprays or wet burlap.
- D. Unexposed Form Finish: Repair tie holes and patch defective areas. Rub down or chip off fins or other raised areas exceeding 1/4-inch height.
- E. Exposed Form Finish: Repair and patch defective areas, with fins or other projections completely removed and smoothed.

1. Grout cleaned finish: Apply to surfaces indicated after all contiguous surfaces are accessible; do not clean as work progresses.
 - a. Prepare grout using 1 part Portland cement, 1-1/2 parts fine sand, and enough water to produce a mixture with consistency of thick paint. Achieve grout color matching concrete surface color by blending normal and white Portland cements.
 - b. Wet areas to be cleaned and apply grout mixture evenly by brush or spray. Scrub surface immediately after grout application to fill minor air bubbles, using cork float or stone, and remove excess grout while it is still plastic. After initial drying, rub surface vigorously with clean burlap, and keep moist for not less than 36 hours.
2. 2. Contiguous unformed surfaces: Strike smooth and float to a similar texture tops of walls, horizontal offsets, and other unformed surfaces adjacent to or contiguous with formed surfaces. Continue final finish of formed surfaces across unformed surfaces, unless otherwise specifically indicated

3.05 FINISHING SLABS:

- A. Interior Floor and Exterior Slab Finishes and Tolerances, General: See SCHEDULE in Section 3.17 of this specification for finishes. Achieve flat, level planes except where slopes or grades are indicated. Tolerances shall be in accordance with FF (flatness) and FL (levelness) as defined in ACI 117.
- B. Finishing Operations, General: Do not directly apply water to slab surface or dust with cement. Use hand or powered equipment only as recommended in ACI 302.1.
- C. Screeding: Strikeoff to required grade and within surface tolerances indicated. Verify conformance to surface tolerances. Correct deficiencies while concrete is still plastic.
- D. Bull Floating: Immediately following screeding, bull float or darby before bleed water appears to eliminate ridges, fill in voids, and embed coarse aggregate.

Recheck and correct surface tolerances.

- E. Final floating: Do not perform subsequent finishing until excess moisture or bleed water has disappeared and concrete will support either foot pressure with less than 1/4-inch indentation or weight of power floats without damaging flatness.
 - 1. Float to embed coarse aggregate, to eliminate ridges, to compact concrete, to consolidate mortar at surface, and to achieve uniform, sandy texture.
 - 2. Recheck and correct surface tolerances.
- F. Troweling: Trowel immediately following final floating.
 - 1. Apply first troweling with power trowel except in confined areas, and apply subsequent trowelings with hand trowels.
 - 2. Wait between trowelings to allow concrete to harden. Do not over-trowel.
 - 3. Begin final troweling when surface produces a ringing sound as trowel is moved over it. Consolidate concrete surface by final troweling operation. Completed surface shall be free of trowel marks, uniform in texture and appearance, and within surface tolerance specified.
 - 4. Grind smooth surface defects which would telegraph through final floor covering system.
- G. Finishes:
 - 1. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile on mortar bed, and paint or another thin film-finish coating system. Grind smooth any surface defects that would telegraph through applied floor covering system.
 - 2. Trowel and Burnished Finish: In warehouse storage and materials handling areas, at exposed concrete floor slab, trowel finish as specified above with burnishing in compliance with Class 5 requirements according to Table 3.14.2(a) of ACI 301, without topping.

3. Non-Slip Broom Finish: Apply a non-slip broom finish to troweled finish at exterior concrete platforms, steps, and ramps, and elsewhere as indicated. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route.
- H. Repair of Slab Surfaces: Test slab surfaces for smoothness and to verify surface plane to tolerance specified. Repair defects as follows:
1. High areas: Correct by grinding after concrete has cured for not less than 14 days.
 2. Low areas: Immediately after completion of surface finishing operations, cut out low areas and replace with fresh concrete. Finish repaired areas to blend with adjacent concrete. Proprietary patching compounds may be used when approved by the Architect (Structural Engineer).
 3. Crazed or cracked areas: Cut out defective areas, except random cracks and single holes not exceeding 1-inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts. Dampen exposed concrete and apply bonding compound. Mix, place, compact, and finish patching concrete to match adjacent concrete.
 4. Isolated cracks and holes: Groove top of cracks and cut out holes not over 1-inch in diameter. Dampen cleaned concrete surfaces and apply bonding compound; place dry pack or proprietary repair compound acceptable to Architect (Structural Engineer) while bonding compound is still active:
 - a. Dry-pack mix: One part Portland cement to 2-1/2 parts fine aggregate and enough water as required for handling and placing.
 - b. Install patching mixture and consolidate thoroughly, striking off level with and matching surrounding surface. Do not allow patched areas to dry out prematurely

3.06 CONCRETE CURING AND SEALING:

- A. Curing, General: Protect freshly placed concrete from premature drying and

excessive cold or hot temperatures. Use curing method compatible with applied finishes, waterproofing and other coatings. When coatings or waterproofing are to be applied to concrete or when concrete is intended to remain exposed, use moist curing (sheet) method only. See Schedule at end of this Section.

1. In hot, dry, and windy weather protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material.
 2. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days, or as recommended by manufacturer.
 3. Apply curing compounds after screeding and bull floating, but before power floating and troweling.
 4. Apply sealer hardener compounds as scheduled at end of this Section.
- B. Application of Liquid and Dust-On Agents: Apply agents in accordance with manufacturer's instructions and recommendations.
- C. Curing, Floors and Slabs: Apply curing compound on exposed interior slabs and on exterior slabs, walks, and curbs as follows:
1. Floor slabs to receive concrete floor topping or mortar setting beds for ceramic tile or stone tile: Curing compound or moist cure.
 2. Floor slabs to receive adhesively-applied resilient flooring or carpet: Moist cure [or curing, hardening and dustproofing compound (compatible with flooring adhesives)]. Coordinate moist curing with flooring application requirements and provide sealer as necessary to avoid detrimental affect of dusting.
 3. Floor slabs to receive waterproof membrane or thinset ceramic tile: Moist cure only.
 4. Floor slabs to remain exposed and receive only light traffic (electrical rooms and equipment rooms): Curing, hardening and dustproofing compound or

moist cure. If moist cure, apply one coat of surface hardening and dustproofing compound as specified for other exposed floor slabs.

5. Floor slabs to remain exposed and receive normal pedestrian and light vehicle traffic: Moist cure. Apply specified sealers or surface hardening compound as scheduled at end of this Section.

6. Equipment pads and bases: Match surrounding floor.

3.07 PATCHING FORMED CONCRETE:

A. Remove fins, projections, and offsets. Cut out rock pockets, honeycomb, and all other defects to sound concrete, with edges of cuts straight and back-beveled. Dampen cut-outs and edges, and scrub with neat Portland cement slurry just before patching, or an apply approved epoxy concrete adhesive.

B. Saturate form tie holes with water and fill voids and patches with flush smooth-finished mortar of same mix as concrete (less coarse aggregate), cure, and dry.

3.08 MISCELLANEOUS CONCRETE ITEMS:

A. Filling In: Fill in holes and openings left in concrete structures for passage of Work specified in other Sections, after such Work is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

3.09 GROUTING AND DRYPACKING:

A. Install as indicated or required. Where grouting and drypacking is part of the

work of other sections, it shall conform to the following requirements, as applicable.

- B. Drypacking: Mix materials thoroughly with minimum amount of water. Pre-saturate surfaces to receive dry pack for 24-hours prior to placement, install drypack by forcing and rodding to fill voids and provide complete bearing under plates. Finish exposed surfaces smooth and cure with damp burlap or liquid curing compound.
- C. Non-Shrink Grouting:
 - 1. Mixing: Mix the approved non-shrink grout material with sufficient water per manufacturer's recommendations.
 - 2. Application: Surfaces to receive the non-shrink grout shall be clean, and shall be pre-saturated thoroughly 24-hours before placing the mortar. Before grouting, surfaces to be in contact shall be roughened and cleaned thoroughly, all loose particles shall be removed and the surface flushed thoroughly with neat cement grout immediately before the grouting mortar is placed. Place fluid grout from one side only and puddle, chain, or pump for complete filling of voids; do not remove the dams or forms until grout attains initial set. Finish exposed surfaces smooth, and cure as recommended by grout manufacturer.

3.010 SITE CONCRETE WORK:

- A. Use bituminous type joint filler. Cure all concrete for at least 10 days with liquid curing compound or sheet material except as otherwise specified. Construct all site concrete of 2,000 psi concrete unless otherwise indicated or specified. Provide reinforcing bars or mesh only where indicated. Conform to requirements specified hereinbefore for slab finishing and curing as applicable.
- B. Concrete Curbs: Provide 1/2" thick expansion joints, at beginning and at end of curves, intersections, and 20-foot intervals between, set plumb, square, and to same profile as the curbs. Edge curb tops to 1/2" radius and vertical joints to 1/4" radius. Apply smooth finish followed by fine hair brush finish.

- C. Concrete Gutters: Provide 1/2" thick expansion joints as above for curbs and apply a light broom finish with a 3" wide steel trowel finish at flow line.
- D. Combination Curb and Gutter: As above for curbs and gutters, including expansion joints, 3" troweled flow line at base of curb.
- E. Concrete Walks: Provide 1/2" expansion joints as specified for curbs and where walks abut rigid structures, aligned with joints in curbs where adjoining, and apply light broom finish perpendicular to traffic direction. Score walks as shown or directed.
- F. Control Joints: Provide sawed joints for concrete walks and exterior concrete pavement as indicated. Use "Zip Strip" as distributed by S.C.A. Construction Supply, Santa Fe Springs, Calif., or equal only where specifically indicated. Install tops of the joints flush with the concrete surface and depth of joint a minimum of 1/4 the thickness of slab.

3.011 OFF-SITE CONCRETE WORK:

- A. Provide new concrete items where indicated, and replace existing items damaged by Contractor's operations. Secure and pay for required permits, inspections, engineering, and surveying.

3.012 SLURRY CONCRETE:

- A. Slurry concrete shall be used as fill or backfill where indicated, and wherever excavations are carried below design depths without approval. Slurry concrete shall be placed within 1 hour after mixing, and shall be placed in manner that will prevent voids in, or segregation of, the concrete.
- B. Backfilling over slurry concrete shall not be done less than 4 hours after placing.

3.013 INSTALLATION OF WATERSTOPS:

- A. Heat fuse waterstop joints and connections in accordance with manufacturer's instructions including heating tools and devices. Run waterstops continuous in joints, following offsets and angles in joints until spliced to waterstops at

intersecting joints, completely sealing the structure. Align and center waterstops in joints unless otherwise indicated.

- B. Tie flanges to reinforcing with 18 gage wire ties spaced at maximum 18" intervals. Test all waterstops, including splices, intersections, and welds, with approved holiday spark detector before concrete is placed.

3.014 FIELD QUALITY CONTROL:

- A. Level of Floors: Continuously monitor concrete placing to maintain level floor by use of an instrument level, transit, or laser
- B. Delivery tickets: Have available copies of delivery tickets complying with ASTM C94 for each load of concrete delivered to site. Include on the tickets the additional information specified in the ASTM document.
- C. Continuous Inspection: Construct structural concrete exceeding 2,500 psi compressive strength under continuous inspection of Inspector. Obtain inspection and approval of forms and reinforcing by Building Department as required and by the Inspector before placing structural concrete.
- D. Testing of Concrete: Testing Laboratory shall perform following tests. Samples for testing shall be obtained in accordance with ASTM C172, and shall be taken from as close to point of placement as possible.
 - 1. Compressive Strength Tests: Cast one set of four or more cylinders from each day's placing and each 150 cubic yards, or fraction thereof, or not less than once for each 2,000 square feet of surface area for slabs and walls, of each strength of structural concrete. Date cylinders, assign record number, and tag showing the location from which sample was taken. Also record slump test result of sample. Do not make more than two series of tests from any one location or batch of concrete.
 - 2. Slump Tests: Make slump test for each set of test cylinders.
 - 3. Test Cylinders: Samples will be made in accordance with ASTM C172. Cast cylinders according to ASTM C31; 24 hours later, store cylinders under moist curing conditions at about 70 degrees F. Test according to ASTM C39; one at 7

and two at 28 day ages. The remaining cylinder(s) shall be kept in reserve in case tests are unsatisfactory.

4. Control Test Cylinders: Cast a set of two or more cylinders for each day's placing of concrete for slabs supported on shoring. Place test cylinders on slabs represented by cylinders and cure the same as slabs. Test cylinders to determine proper times for removal of shores and reshoring. A strength test shall be the average of the compressive strengths of 2 cylinders made from the same sample of concrete and tested at 28 days.
5. Shrinkage Test: Cast 4" by 4" by 11" long bars with 10" effective gauge length, cured for 7 days in moist room and as specified in ASTM C157. Make measurements at 7-day intervals to 35 day age. Allowable shrinkage shall not exceed 0.45% after period of 35 days.

- E. Core Tests: comply with 2007 CBC Section 1905.6.5. If tests show the compressive strength of any concrete falls below the required minimum, additional testing of concrete which unsatisfactory tests represent may be required. Make core tests according to ASTM C42. Fill core holes with drypack concrete of strength required for concrete. Contractor shall bear cost of tests for below-strength concrete even if such tests indicate concrete has attained required minimum compressive strength, and all costs for required corrections.
- F. Field Certifications: For all concrete, provide signed copy of batch plant's certificate stating quantity of each material, amount of water, admixtures, departure time and date accompanying each load of materials or concrete.
- G. Local Flatness/Levelness Tests: When and if directed by Owner, concrete floor flatness and levelness shall be tested in conformance to ACI 117 for Face Floor Profile Numbers (FF and FL designations) specified.
 1. Tests will be made by an independent testing and inspection agency selected and paid by Owner.

2. Floor flatness and levelness measurements will be determined by a continuous recording differential profileograph.
3. On each newly placed and finished floor, testing and reporting will be as follows:
 - a. Within 16 hours of completion of final troweling operation, floor tolerance measurements will commence.
 - b. Within 18 hours of completion of final troweling operation, Contractor will be provided with written notice of acceptance or rejection of floor slab.
 - c. Within 24 hours of completion of final troweling operation, Owner's testing and inspection agency will mark floor areas to indicate defective areas which require corrective Work.
 - d. Within 3 working days of completion of final troweling operation, measurements of overall grade tolerance will be made and the results provided to Contractor not later than 7 working days from date of completion of final troweling.
 - e. Weekends and holidays shall be excluded in computing time from completion of final troweling operation.

Example: Final troweling operation completed at 5:00pm Thursday; notice of acceptance or rejection due 11:00 am Friday.

Example: Final troweling operation completed at 5:00pm Friday; notice of acceptance or rejection due 11:00 am Monday.

4. Correction of Flatness and Levelness Defects: Flatness and levelness defects in concrete floors shall be corrected by grinding or by removal and replacement of defective floor slab. Filling of low areas will not be accepted

for concrete floors to remain exposed. Correction of defects shall be made before application of floor hardening compounds.

5. Re-inspection: All areas requiring corrective Work will be measured in a timely manner by Owner's testing and inspection agency after completion of corrective Work. Report of measurements will be made to Contractor within 24 hours of completion of inspection.
6. Cost of Re-inspection: Costs of inspection of corrective Work shall be paid by Contractor. Owner will deduct such costs from Contractor's next Application for Payment. If re-inspection of corrective Work occurs after 2 working days following completion of final troweling operation at final floor segment, costs of inspection of corrective Work shall include all costs for maintaining Owner's testing and inspection agency on site.
7. Certification of Tolerance Compliance: Owner's testing and inspection agency will provide final report certifying tolerances within 10 working days of completion of concrete floors, including any corrective Work.

3.015 DEFECTIVE CONCRETE

- A. Defective Concrete: The following concrete will be deemed to be defective, and shall be removed promptly from the job site.
 1. Concrete which is not formed as indicated, is not true to intended alignment, is not plumb or level where so intended, is not true to intended grades and levels;
 2. Has voids or honeycomb that have been cut, resurfaced, or filled, unless with the approval of the Architect;
 3. Has sawdust, shavings, wood, or embedded debris;
 4. Does not conform fully to provisions of the Contract Documents.
- B. Repairs and Replacements:

1. Where defective concrete is found after removal of the forms, cut out the defective concrete, if necessary, and make the surfaces match adjacent surfaces.
2. Work uneven surfaces and angles of concrete to a surface matching adjacent concrete surfaces.

3.016 PROTECTION:

- A. Protection: Protect concrete from marring and damage due to weather and construction activities.
 1. Protective measures shall include providing temporary coverings, as specified in Section 01500 - Construction Facilities and Temporary Controls, and prohibiting all non-essential construction activities, including cleaning and maintenance of construction equipment.
 2. In particular, protect concrete floor slabs from oil, paint and other products which might penetrate and degrade concrete surface

3.017 FLOOR AND SLAB CURING AND FINISHING SCHEDULE:

LOCATION	<u>Finishing</u>	<u>Curing and Sealing</u>
Interior floor slabs-on-grade.	Trowel and burnish finish, FF35/FL25.	Moist cure only; do not use curing compound. Apply floor sealer / hardener [before moist cure as specified in Section 03360] [after curing is completed and floor cleaned.] Re-apply, after cleaning, in preparation for Substantial Completion review.
Exterior slabs, pedestrian traffic, exposed concrete finish.	Smooth trowel finish, FF25/FL20, with medium broom texture, sloped to drain.	Apply curing and sealing compound or moist cure, followed by cleaning and application of sealing compound.

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL FRAMING

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural steel.
2. Architecturally exposed structural steel.

B. Related Requirements:

1. Division 01 – General Requirements.
2. Section 01 4523 – Testing and Inspection.
3. Section 03 3000 – Cast-In-Place Concrete.
4. Section 04 2200 – Concrete Unit Masonry.
5. Section 05 3000 – Metal Decking.
6. Section 05 5000 – Metal Fabrications.
7. Section 07 8116 – Cementitious Fireproofing.
8. Section 09 9000 – Paints and Coatings.

1.2 REFERENCES

A. CBC Chapter 22A.

B. American Institute of Steel Construction (AISC):

1. AISC – Steel Construction Manual:
 - a. AISC 360 Specifications for Structural Steel Buildings.

- b. AISC Code of Standard Practice for Steel Buildings and Bridges.
 - c. RCSC Specification for Structural Joints Using ASTM A325 or A490 Bolts.
- 2. AISC 341 – Seismic Provisions for Structural Steel Buildings, including Supplements.
 - 3. AISC 358 – Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications.
- C. American Society for Testing and Materials (ASTM):
- 1. ASTM A36 – Standard Specification for Carbon Structural Steel.
 - 2. ASTM A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 3. ASTM A108 – Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.
 - 4. ASTM A123 – Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.
 - 5. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 6. ASTM A307 – Standard Specification for Carbon Steel Bolts and Studs, 60000 PSI Tensile Strength.
 - 7. ASTM A325 – Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 Ksi Minimum Tensile Strength.
 - 8. ASTM A435 – Standard Specification for Straight-Beam Ultrasonic Examination of Steel Plates.
 - 9. ASTM A490 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 - 10. ASTM A500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.
 - 11. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.

12. ASTM A572 – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
13. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
14. ASTM A673 – Standard Specification for Sampling Procedure for Impact Testing of Structural Steel.
15. ASTM A780 – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
16. ASTM A992 – Standard Specification for Structural Steel Shapes.
17. ASTM C1107 – Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrink).
18. ASTM E23 – Standard Test Methods for Notched Bar Impact Testing of Metallic Materials.
19. ASTM E112 - Standard Test Methods for Determining Average Grain Size.
20. ASTM F436 – Standard Specification for Hardened Steel Washers.
21. ASTM F959 – Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners.
22. ASTM F1554 – Standard Specification for Anchor Bolts, Steel, 36, 55 and 105-Ksi Yield Strength.
23. ASTM F1852 – Standard Specification for “Twist Off” Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tension Strength.

D. American Welding Society (AWS):

1. AWS D1.1 – Structural Welding Code - Steel.
2. AWS D1.8 – Structural Welding Code – Seismic Supplement.
3. AWS A2.4 – Standard Symbols for Welding, Brazing, and Nondestructive Examination.

4. AWS B2.1 – Specifications for Welding Procedures and Performance Qualification.
- E. SSPC – Steel Structures Painting Council:
1. SP-2 – Hand Tool Cleaning.
 2. PA-1 – Paint Application Specification No. 1.

1.3 REGULATORY REQUIREMENTS

- A. Structural steel shall conform to CBC requirements, except that steel manufactured by acid Bessemer process is not permitted for structural purposes.
- B. Sheet and strip steel other than those listed in CBC, if provided for structural purpose, shall comply with DSA requirements.

1.4 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings, including complete details and schedules for fabrication and shop assembly of members, and details, schedules, procedures and diagrams showing the sequence of erection. Fully detail minor connections and fastenings not shown or specified in the Contract Documents to meet required conditions using similar detailing as shown in the Contract Documents. Include a fully detailed, well controlled sequence and technique plan for shop and field welding that minimizes locked in stresses and distortion; submit sequence and technique plan for review by the ARCHITECT.
 1. Include details of cuts, connections, camber, and holes in accordance with Figure 4.5 of AWS D1.1 or AISC Chapter J, weld position plan and other pertinent data. Indicate welds by standard AWS symbols, and show size, length and type of each weld.
 2. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed for Work specified in other sections.
 3. Erection and Bracing Plan and Erection Procedure: Submit an erection and framing plan, including columns, beams, and girders, signed and sealed by a Structural or Civil Engineer registered in the State of California in accordance with Title 8 California Code of Regulations, Section 1710, Structural Steel Erection. Maintain a copy at the Project site as required by the California Division of Industrial Safety.
 4. Submit a list of steel items to be galvanized.

5. Include identification and details of Architecturally Exposed Structural Steel (AESS) members, if applicable.
- B. Product Data: Submit copies of fabricator's specifications and installation instructions for the following products. Include laboratory test reports and other data required demonstrating compliance with these Specifications:
1. Structural steel, each type; including certified copies of mill reports covering chemical and physical properties.
 2. Welding electrodes.
 3. Welding gas.
 4. Unfinished bolts and nuts.
 5. Structural steel primer paint.
 6. High-strength bolts, including nuts and washers.
- C. Manufacturer's Mill Certificate: Submit, certifying that products meet or exceed specified requirements.
- D. Mill Test Reports: Submit manufacturer's certificates, indicating structural yield and tensile strength, destructive and non-destructive test analysis.
- E. Welding Procedure Specifications (WPS): Submit weld procedures for all welding on project to OWNER's testing laboratory for approval. After approval by testing laboratory, submit to ARCHITECT for Record. Weld procedures shall be qualified as described in AWS D1.5, AISC 341 and AISC 358, as applicable. Weld procedures shall indicate joints details and tolerances, preheat and interpass temperature, post-heat treatment, single or multiple stringer passes, peening of stringer passes for groove welds except for the first and the last pass, electrode type and size, welding current, polarity and amperes and root treatment. The welding variables for each stringer pass shall be recorded and averaged; from these averages the weld heat input shall be calculated. Submit the manufacturer's product data sheet for all welding material used.
- F. Welder's Certificates: Field welders shall be Project certified in accordance with AWS D1.1. Shop welders shall be Project certified for FCAW in accordance with AWS D1.1.
- G. Test Reports: Submit reports of tests conducted on shop and field welded and bolted connections. Include data on type of test conducted and test results.

1.5 QUALITY ASSURANCE

- A. Comply with the following as a minimum requirement, except as otherwise indicated:
 - 1. American Institute of Steel Construction (AISC) “Code of Standard Practice for Steel Buildings and Bridges, modified as follows:
 - a. Replace “Structural Design Drawings” with “Contract Documents’ throughout the document.
 - b. Paragraph 3.2 is hereby modified in its entirety as follows: “Contract Documents including but not limited to architectural, mechanical, plumbing, electrical, civil and kitchen design drawings and specifications shall be used as supplement to the structural plans to define configurations and construction information.”
 - c. Delete Paragraph 3.3.
 - d. In Paragraph 4.4, delete the following sentence: “These drawings shall be returned to the Fabricator within 14 calendar days.”
 - e. Delete Paragraph 4.4.1.(a) in its entirety.
 - f. Paragraph 4.4.2 is hereby modified in its entirety as follows: “No review action, implicit or explicit, shall be interpreted to authorize changes in the Contract Documents.”
 - 2. Perform welding in accordance with AWS Standards, AWS D1.1, and California Building Code Section 2204A.1 and approved Weld Procedure Specifications (WPS).
- B. Shop fabrication shall be inspected in accordance with CBC.
- C. Erect mock-up panel of fabricated structural steel meeting Architecturally Exposed Structural Steel (AESS) tolerances for exposed areas. Approval by ARCHITECT is required. Mock-up to remain for comparison but may not be left as part of the work.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store structural steel above grade on platforms, skids or other supports.
- B. Protect steel from corrosion.
- C. Store welding electrodes in accordance with AWS D 12.1.

- D. Store other materials in a weather-tight and dry place until installed into the Work.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Stock Materials: Provide exact materials, sections, shapes, thickness, sizes, weights, and details of construction indicated on Drawings. Changes because of material stock or shop practices will be considered if net area of shape or section is not reduced thereby, if material and structural properties are at least equivalent, and if overall dimensions are not exceeded.
- B. Shapes, bars, plates, tubes and pipes shall be made of materials with at least 16 percent recycled content if produced from Basic Oxygen Furnace (BOF) or at least 67 percent recycled content if produced from Electric Arc Furnace (EAF).

2.2 MATERIALS

- A. Structural Steel: Wide flange shapes shall conform to ASTM A992 grade 50. Other steel shall conform to ASTM A36.
- B. Unfinished Threaded Fasteners: ASTM A307, Grade A, regular low carbon bolts and nuts.
- C. High-Strength Threaded Fasteners: ASTM A325, ASTM A490 ASTM F959 or ASTM F1852 quenched and tempered, steel bolts, nuts and washers.
- D. Primers: Lead-free metal primer:
 - 1. SSPC-Paint 20, Zinc-Rich Primer.
 - 2. SSPC-Paint 23, Latex Primer.
 - 3. SSPC-Paint 25 Zinc Oxide Primer.
- E. Steel Pipe: ASTM A53, Type E or S, Grade B.
- F. Structural Tubing:
 - 1. Hot-formed, ASTM A501.
 - 2. Cold-formed, ASTM A500, Grade B.

- G. Galvanizing: ASTM A123.
- H. Shear stud connectors: ASTM A108, Grade 1015 forged steel, headed, uncoated, granular flux filled shear connector or anchor studs by Nelson Stud Welding Division, or equal.
- I. Grout: ASTM C1107, non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7,000 psi at seven days; of consistency suitable for application and a 30-minute working time.

2.3 FABRICATION

- A. Fabricate in accordance to AISC Code of Standard Practice for Steel Buildings and Bridges and AISC 360.
- B. Cleaning and Straightening Materials: Materials being fabricated shall be thoroughly cleaned of scale and rust, and straightened before fabrication. Cleaning and straightening methods shall not damage material. After punching or fabrication of component parts of a member, twists or bends shall be removed before parts are assembled.
- C. Cutting, Punching, Drilling and Tapping: Unless otherwise indicated or specified, structural steel fabricator shall perform the cutting, punching, drilling and tapping of Work so that Work of other trades will properly connect to steel Work.
- D. Milling: Compression joints depending on contact bearing shall be furnished with bearing surfaces prepared to a common plane by milling.
- E. Use of Burning Torch: Oxygen cutting of members shall be performed by machine. Gouges greater than 3/16 inch that remain from cutting shall be removed by grinding. Reentrant corners shall be shaped notch free to a radius of at least 1/2 inch. Gas cutting of holes for bolts or rivets is not permitted.
- F. Galvanizing: After fabrication, items indicated or specified to be galvanized shall be galvanized in largest practical sizes. Fabrication includes operations of shearing, punching, bending, forming, assembling or welding. Galvanized items shall be free from projections, barbs, or icicles resulting from the galvanizing process.
- G. Welding:
 - 1. Type of steel furnished in welded structures shall provide chemical properties suitable for welding as determined by chemical analysis. Welds

shall conform to the verification and inspection requirements of CBC Chapter 17A. Conform to AWS D1.1, and CBC Chapter 22A.

2. Materials and workmanship shall conform to the requirements specified herein and to CBC requirements, modified as follows:
 - a. No welded splices shall be permitted except those indicated on Drawings unless specifically reviewed by the ARCHITECT.
 - b. Drawings will designate joints in which it is important that welding sequence and technique be controlled to minimize shrinkage stresses and distortion.
3. Welding shall be performed in accordance with requirements of the AWS Structural Welding Code.
4. Architecturally Exposed Structural Steel: Verify that weld sizes, fabrication sequence, and equipment used for Architecturally Exposed Structural Steel will limit distortions to allowable tolerances. Prevent surface bleeding of back-side welding on exposed steel surfaces. Grind smooth exposed fillet welds ½ inch and larger. Grind flush butt welds. Dress exposed welds.
5. Remove erection bolts on welded, Architecturally Exposed Structural Steel; fill holes with plug welds; and grind smooth at exposed surfaces.

H. Shop Finish:

1. Notify the Project Inspector when Work is ready to receive shop prime coat. Work shall be inspected by the Project Inspector before installation of primer.
2. Structural steel and fittings shall receive a coat of primer, except:
 - a. Surfaces that will be galvanized.
 - b. Surfaces that will be fireproofed.
 - c. Surfaces that will be field welded.
 - d. Surfaces in contact with concrete.
 - e. Surfaces high strength bolted.
3. The primer specified shall be spray applied, filling joints and corners and covering surfaces with a smooth unbroken film. The minimum dry film thickness of the primer shall be 2.0 mils.

- I. Comply with fabrication tolerance limits of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for structural steel.
- J. Fabricate Architecturally Exposed Structural Steel with exposed surfaces smooth, square, and free of surfaces blemishes, including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness.
 - 1. Remove blemishes by filling, grinding, or by welding and grinding, prior to cleaning, treating and shop priming.
 - 2. Comply with fabrication requirements, including tolerance limits of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for Architecturally Exposed Structural Steel.
- K. Architecturally Exposed Structural Steel: use special care in unloading, handling and erecting the steel to avoid marking or distorting the steel members. Minimize damage to any shop paint when temporary braces or erection clips are used. Avoid unsightly surfaces upon removal. Grind smooth tack welds and holes filled with weld metal or body solder. Plan and execute all operations in such a manner that the close fit and neat appearance of the structure will not be impaired.

2.4 SHOP AND FIELD QUALITY CONTROL

- A. A special inspector, approved by DSA to inspect the Work of this section, shall inspect high-strength bolted connections. OWNER will provide a DSA approved independent testing laboratory to perform tests and prepare test reports in accordance with CBC 1704A. The Project Inspector shall be responsible for monitoring the work of the special inspector and testing laboratories to ensure that the testing program is satisfactorily completed.
- B. An AWS CWI certified special inspector, approved by DSA to inspect the Work of this section, shall inspect welded connections in accordance with CBC 1705A.2.5. The OWNER will provide a DSA approved independent testing laboratory to perform tests and prepare test reports. The Project Inspector shall be responsible for monitoring the work of the special inspector and testing laboratories to ensure that the testing program is satisfactorily completed.
- C. The independent testing laboratory shall conduct and interpret test and state in each report whether test specimens comply with requirements, and specifically state any deviations there from.
- D. Provide access to all places where structural steel Work is being fabricated or produced so required inspection and testing can be performed.

- E. The independent testing laboratory may inspect or test structural steel at plant before shipment; however, ARCHITECT reserves the right at any time before Contract Completion to deem materials not in compliance with the specified requirements as defective Work.
- F. Correct defects in structural Work when inspections and laboratory test reports indicate noncompliance with specified requirements. Perform additional tests as may be required to reconfirm noncompliance of original Work, and as may be required to show demonstrate compliance of corrected Work.
- G. Inspection of Structural Tube Steel/Hollow Structural Sections (HSS): Structural tube steel members (round, square, rectangular), disregarding steel origin, will be inspected during shop fabrication per DSA Bulletin 07-03. Inspector will perform a visual examination of the seam weld area for visible discontinuities. When defects are suspected, non-destructive testing will be considered.
- H. Welding: Inspect and test during fabrication and erection of structural steel assemblies as follows:
 - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in the Work. Record Work required and performed to correct deficiencies.
 - 2. Inspect welds. Welds shall be visually inspected before performing any non-destructive testing. Groove weld shall be inspected by ultrasonic or other approved non-destructive test methods. Testing shall be performed to AWS D1.1 Table 6.3 cyclically loaded non-tubular connections.
 - 3. Ultrasonic testing shall be performed by a specially trained and qualified technician who shall operate the equipment, examine welds, and maintain a record of welds examined, defects found, and disposition of each defect. Repair and test defective welds.
 - 4. Rate of Testing: Completed welds contained in joints and splices shall be tested 100 percent either by ultrasonic testing or by radiography.
 - 5. Welds, when installed in column splices, shall be tested by either ultrasonic testing or radiography.
 - 6. Base metal thicker than 1 ½-inch, when subjected to through-thickness weld shrinkage strains, shall be ultrasonically inspected by shear wave methods for discontinuities directly behind such welds. Tests shall be performed at least 48 hours after completed joint has cooled down to ambient air temperature.

7. Material discontinuities shall be reviewed based on the defect rating in accordance with the criteria of AWS D1.1 table 6.3 by the ARCHITECT and DSA.
 8. Other method of non-destructive testing and inspection, for example, liquid dye penetrate testing, magnetic particle inspection or radiographic inspection may be performed on weld if required.
 9. Lamellar Tearing: Lamellar-tearing resulting from welding is a crack (with zero tolerance) and shall be repaired in accordance with AWS D1.1.
 10. Lamination: The rejection criteria shall be based on ASTM A435.
 11. Where testing reveals lamination or conditions of lamellar tearing in base metal, the steel fabricator shall submit a proposed method of repair for review by the ARCHITECT. Test repaired areas as required.
 12. 1Magnetic Particle Testing: Magnetic particle testing when required shall be provided in accordance with AWS D1.1 for procedure and technique. The standards of acceptance shall be in accordance with AWS D1.1 – Qualification.
- I. Lamellar Tearing: Prior to welding plates 1 to 1 ½-inch thick and greater and rolled shapes within the distance from 6 inches above the top of the joint to 6 inches below the bottom of the joint shall be checked by ultrasonic testing for laminations in base metal which may interfere with the inspection of the completed joint. Should these defects occur, members will be reviewed by the ARCHITECT and DSA. Welding procedure specifications in sub-section 1.5G specify welding practices to minimize lamellar tearing.
 - J. Prior Testing of Base Material: Test material before fabrication.
 - K. Lines and levels of erected steel shall be certified by a State of California licensed surveyor as set forth in related Division 01 section.
 - L. Welded studs shall be tested and inspected by the special inspector in accordance with requirements of AWS D1.1 – Stud Welding.
 - M. Record Drawings: After steel has been erected, correct or revise Shop Drawings and erection diagrams to correspond with reviewed changes performed in the field.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify governing dimensions and conditions of the Work before commencing erection Work.
 - 1. Report discrepancies between drawings and field dimensions to ARCHITECT before commencing work.
 - 2. Beginning of installation means erector accepts existing conditions and surfaces underlying or adjacent to work of this section.
- B. Provide temporary shoring and bracing, and other support during performance of the Work. Remove after steel is in place and connected, and after cast-in-place concrete has reached its design strength.
- C. Coordinate prime coat repair and application with requirements of Section 09 9000.

3.2 ERECTION

- A. Install structural steel accurately in locations, to elevations indicated, and according to AISC specifications and CBC requirements.
- B. Clean surfaces of base plates and bearing plates.
 - 1. Install base and bearing plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims; cut off flush with edge of base or bearing plate before packing with grout.
- C. Maintain erection tolerances of structural steel within AISC Code of Standard Practice for Steel Buildings and Bridges.
 - 1. Architecturally Exposed Structural Steel members and components, plumbed, leveled and aligned to a tolerance not to exceed one-half the amount permitted for structural steel. CONTRACTOR to provide adjustable connections between Architecturally Exposed Structural Steel and the structural steel frame or the masonry or concrete supports, in order to provide the erector with means for adjustment.
- D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact after assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
- E. Do not permit thermal cutting during erection of structural steel.

- F. Where indicated for field connections, provide standard bolts complying with ASTM A307.
- G. Install high strength steel bolts at locations indicated. Assembly and installation shall be in accordance with CBC requirements.
 - 1. Allowable hole sizes: 1/16 inch larger than bolt size.
 - 2. Use friction type connection with standard hardened steel circular, square or rectangular washer under bolt nut.
 - 3. Thoroughly clean area under bolt head, nut and washer. Remove all paint, lacquer, oil or other coatings except organic zinc-rich paints in accordance with SSPC, SP-2.
 - 4. Tighten bolts by power torque wrench or hand wrench until twist-off.
- H. CONTRACTOR shall be responsible for correcting detailing and fabrication errors and for correct fitting of all members and components.
- I. Erect structural steel plumb and level and to proper tolerances as set forth in the AISC Manual. Provide temporary bracing, supports or connections required for complete safety of structure until final permanent connections are installed.
- J. Install column bases within a tolerance of 1/8 inch of detailed centerlines, level at proper elevations. Support bases on double nuts and solidly fill spaces under bases with cement grout.
- K. Provide anchor bolts with templates and diagrams. CONTRACTOR shall be responsible for proper location and installation of bolts. Correct deficiencies and errors.
- L. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and apply galvanizing repair paint according to ASTM A780.

3.3 FITTING

- A. Closely fit members, finished true to line and in precise position required to allow accurate erection and proper joining in the field.
- B. Drilling to enlarge unfair holes will not be allowed. Allow only enough drifting during assembly to bring parts into position, but not enough to enlarge holes or distort the metal. Do not heat rolled sections, unless approved by ARCHITECT.

3.4 PUNCHING AND DRILLING

- A. Punch material 1/16 inch larger than nominal diameter of bolt, wherever thickness of metal is equal to or less than the diameter of the bolt plus 1/8 inch.
- B. Drill or sub-punch and ream where metal is equal to or more than the diameter of the bolt plus 1/8 inch. Make diameter for sub-punched and sub-drilled holes 1/16 inch larger than nominal diameter of bolt.
- C. Precisely locate holes to ensure passage of bolt through assembled materials without drifting. Enlarge holes when necessary to receive bolts by reaming; flame cutting to enlarge holes is not acceptable. Structural Steel members with poorly matched holes will be rejected.

3.5 FINISHING

- A. After erection, spots or surfaces where paint has been removed, damaged, or burned off, and field rivets, bolts, and other field connections shall be cleaned of dirt, oil, grease, and burned paint and furnished with a spot coat of the same primer installed during shop priming.
- B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Install paint to exposed areas with the same material installed during shop painting. Install by brush or spray to provide a minimum dry film thickness of 1.5 mils.

3.6 FIELD QUALITY CONTROL

- A. OWNER will provide a special inspector and independent testing laboratory to perform field inspections and tests and to prepare test reports.
- B. Correct deficiencies in or remove and replace structural steel that inspections and test reports indicate do not comply with specified requirements.

3.7 CLEAN UP

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project Site.

3.8 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.9 HANDLING

- A. Both in shop and in the field, transport, handle and erect to prevent damage or overstressing of any component.

END OF SECTION

SECTION 05 0513
HOT-DIP GALVANIZING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Hot-dip galvanizing of structural steel articles.
2. Hot-dip galvanizing of steel railings.
3. Hot-dip galvanizing of fabricated steel assemblies.
4. Hot-dip galvanizing of fencing steel assemblies.
5. Preparation of galvanized steel assemblies for painting.

B. Related Sections:

1. Division 01 - General Requirements.
2. Section 05 1200: Structural Steel Framing.
3. Section 05 5000: Metal Fabrications.
4. Section 05 5100: Metal Stairs and Railings.
5. Section 09 9000: Painting and Coating.

1.02 REFERENCES

A. American Galvanizers Association (AGA):

1. Inspection of Products Hot-dip Galvanized after Fabrication.
2. The Design of Products to be Hot-dip Galvanized after Fabrication.
3. Recommended Details of Galvanized Structures.

B. ASTM International (ASTM):

1. ASTM A123 – Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.

2. ASTM A143 – Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.
3. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
4. ASTM A384 – Standard Practice for Safeguarding Against Warpage and Distortion during Hot-Dip Galvanizing of Steel Assemblies.
5. ASTM A385 – Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip).
6. ASTM A780 – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
7. ASTM B6 – Standard Specification for Zinc.
8. ASTM D6386 – Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting.
9. ASTM D7803 - Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating.
10. ASTM E376 - Measuring Coating Thickness by Magnetic-Field or Eddy-Current (Electromagnetic) Test Methods.

C. The Society for Protective Coatings (SSPC):

1. SSPC-SP1 – Solvent Cleaning.
2. SSPC-SP2 – Hand Tool Cleaning.
3. SSPC-SP3 – Power Tool Cleaning.
4. SSPC-SP5 – White Metal Blast Cleaning.
5. SSPC-SP7 – Brush-Off Blast Cleaning.
6. SSPC-SP10 – Near White Blast Cleaning.
7. SSPC-SP11 – Power Tool Cleaning to Bare Metal.
8. SSPC-SP16 - Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals.

1.03 COORDINATION WITH STEEL FABRICATOR

- A. Prior to fabrication, steel fabricators shall submit approved fabrication shop drawings to the galvanizer. The Galvanizer shall review fabricator shop drawings for suitability of materials for galvanizing and coatings and coordinate any required fabrication modifications.
- B. Steel Fabricator shall notify the galvanizer of steel fabrications that exceed the ASTM A385 recommended percentages for carbon, phosphorus, manganese and silicon, so special galvanizing processing techniques are used.
- C. Coordinate with steel fabricator appropriate marking and masking materials.

1.04 QUALITY ASSURANCE

- A. Coating Applicator: Company specializing in hot-dip galvanizing after fabrication following the procedures in the Quality Assurance Manual of the American Galvanizers Association.
- B. Galvanizer shall have an in-plant inspection program designed to maintain the coating thickness, finish, and appearance within the requirements of this Section.

1.05 SUBMITTALS

- A. Galvanizing Certificate of Compliance: Provide notarized Certificate of Compliance with ASTM standards and specifications herein listed. The Certificate shall be signed by the galvanizer and contain a detailed description of the material processed. The Certificate shall include information as to the ASTM standard used for the coating.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Package and handle galvanized material in a manner which will avoid damage to the zinc coating.
- B. Store in dry, well-ventilated conditions until shipping.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Steel for Galvanizing: As specified in Sections:
 - 1. Section 05 1200: Structural Steel Framing.
 - 2. Section 05 5000: Metal Fabrications.
 - 3. Section 05 5100: Metal Stairs and Railings.

- B. Zinc for Galvanizing: Conform to ASTM B6, as specified in ASTM A123.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Remove welding slag, splatter, anti-splatter compounds and burrs remaining in steel articles.
- B. Provide drainage and venting holes in tubular assemblies. In thicker material drill holes in place of punching. Holes shall have a relatively uniform circumference. Punched holes or burned holes with a plasma torch shall be treated with a drill to even the diameter to appropriate size.
- C. Masking installed by steel fabricator shall remain in place through galvanizing process completion.
- D. Provide lifting lugs to allow for handling during galvanizing. Avoid the use of chains or wires directly connected to steel articles.
- E. Safeguard against warpage or distortion of steel members in accordance with ASTM A384.
- F. Pre-clean steel work in accordance with accepted methods to produce an acceptable surface for quality hot-dip galvanizing. Remove surface contaminants and coatings that are not removable by the normal chemical cleaning process in the galvanizing operation by grit-blasting, sand-blasting, or other mechanical means.
- G. Follow the degreasing, pickling and fluxing steps to remove remaining oxides and to deposit a protective layer on the steel to prevent any further oxides from forming on the surface prior to immersion in the molten zinc.

3.02 COATING APPLICATION

- A. Galvanize steel articles, fabrications and assemblies by the hot-dip process in accordance with ASTM A123. The bath chemistry shall be as specified by ASTM B6, and requires at least 98% pure zinc maintained at approximately 840 F.
- B. Galvanize bolts, nuts, washers and iron and steel hardware components in accordance with ASTM A153.
- C. Safeguard products against steel embrittlement in conformance with ASTM A143.
- D. Once the fabricated items' coating growth is complete, withdraw slowly from the galvanizing bath, and remove the excess zinc by draining, vibrating, and/or centrifuging.

- E. Prepare galvanized products for powder coating in accordance to ASTM D7803. Prepare galvanized products for painting in accordance to ASTM D6386.
- F. Handle articles to be galvanized in such a manner as to avoid mechanical damage and to minimize distortion.
- G. Apply a chromate passivation treatment to fabrications that will not be painted after galvanizing to minimize the wet storage staining which may occur on articles unable to be stored in dry, well-ventilated conditions.

3.03 COATING REQUIREMENTS

- A. Conform to paragraph 6.1 of ASTM A123, or Table 1 of ASTM A153, as applicable.
- B. Surface Finish: Continuous, adherent, as smooth and evenly distributed as possible and free from any defect detrimental to the stated end use of the coated article
- C. Adhesion: Withstand normal handling consistent with the nature and thickness of the coating and normal use of the article.

3.04 TESTS

- A. Inspection and testing of hot-dip galvanized coatings shall be done under the guidelines provided in the AGA publication Inspection of Products Hot-dip Galvanized after Fabrication. Tests and inspections shall be performed immediately after the coating is applied and has cooled to ambient temperature, and before it leaves the galvanizing facility.
- B. Include visual examination and test methods in accordance with ASTM A123, or A153, as applicable, to determine the thickness of the zinc coating on the metal surface.
- C. During the visual inspection, if adhesion concerns are suspected, such as peeling or flaking of the galvanized coating, then adhesion testing using the stout knife method shall be conducted. Embrittlement testing is required when there is evidence of embrittlement and shall be conducted per the requirements of ASTM A143.
- D. Upon completion of tests furnish notarized Certificate of Compliance with ASTM standards and specifications herein listed.

3.05 REPAIR OF DAMAGED COATINGS

- A. Smooth out rough surfaces, bumpy or high spots and icicles by hand filing or power sanding the area without removing any more zinc coating than necessary. Repair damaged galvanized surface with a zinc rich coating.

- B. Repair areas damaged during galvanizing process or handling by one of the approved methods in accordance with ASTM A780 whenever damage exceeds 3/16" in width. Minimum thickness requirements for the repair shall be per ASTM A123, Section 6.2.
- C. Remove lifting lugs and repair coating with a zinc rich coating.
- D. Surface preparation for application of zinc rich coating shall be in accordance to ASTM A780.
 - 1. Clean areas in accordance to SSPC-SP2.
 - 2. Prepare surface for zinc spray in accordance to SSPC-SP5, or zinc rich paint repair in accordance to SSPC-SP10.

3.06 PREPARATION FOR TOP COATING

- A. Galvanized fabrications indicated on the drawings to be painted shall be prepared in accordance to ASTM D6836.
 - 1. Surface cleaning prior to surface preparation in accordance to SSPC-SP1.
 - 2. Removal of zinc high spots and cleaning of light deposits of zinc reaction products in accordance to SSPC-SP2 or SSPC-SP3.
 - 3. Profile surface in accordance to SSPC-SP7 or SSPC-SP11.
- B. Galvanized fabrications indicated on the drawings to be powder coated shall be prepared in accordance to ASTM D7803.
 - 1. Surface cleaning and removal of oil and grease in accordance to SSPC-1.
 - 2. Surface smoothing and removal of loose particles in accordance to SSPC-SP-2 or SSPC-SP3.
 - 3. Sweep blasting and surface profiling in accordance to SSPC-SP16.

END OF SECTION

SECTION 05 5000
METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Metal fabrications:

1. Steel thresholds.
2. Steel ladders and ladder safety cages.
3. Steel framing and supports for countertops.
4. Steel tube reinforcement for low partitions.
5. Steel framing and supports for mechanical and electrical equipment.
6. Steel Gates.
7. Gratings, frames and covers.
8. Steel bollards.
9. Embedded edge angles in concrete.
10. Steel supports for coiling doors.
11. Steel framing and supports for operable partitions.
12. Supportive framing for sunshade panels.
13. Miscellaneous steel framing, supporting angles, plates, brackets, clips, anchors and bolts for equipment, and other work which is not specifically included in Section 05 1200, Structural Steel Framing.
14. Miscellaneous fabrications, as indicated on the Drawings.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 3000 – Cast-in-Place Concrete.
3. Section 05 5013: Hot-Dip Galvanizing.

4. Section 05 1200: Structural Steel Framing.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM A27 – Standard Specification for Steel Castings, Carbon, for General Application.
2. ASTM A36 – Standard Specification for Carbon Structural Steel.
3. ASTM A47 - Standard Specification for Ferritic Malleable Iron Castings.
4. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
5. ASTM A123 - Standard Specification for Zinc (Hot-Dipped Galvanized) Coatings on Iron and Steel Products.
6. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
7. ASTM A283 - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
8. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
9. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
10. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
11. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
12. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
13. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
14. ASTM D1187 - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal.
15. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.

16. ASTM F2329 - Standard Specification for Zinc Coating, Hot-Dip, Requirements for Application to Carbon and Alloy Steel Bolts, Screws, Washers, Nuts, and Special Threaded Fasteners.

B. American Welding Society (AWS):

1. AWS D1.1 Structural Welding Code - Steel.
2. AWS D1.3 Structural Welding Code - Sheet Steel.
3. AWS D-19.0 Welding Zinc Coated Steel.

1.03 COORDINATION

A. Coordination between Steel Fabricator and Galvanizer:

1. Prior to fabrication, submit approved fabrication shop drawings to the galvanizer.
2. Notify galvanizer of steel fabrications that exceed the ASTM A385 recommended percentages for carbon, phosphorus, manganese and silicon, so special galvanizing processing techniques are used.

B. Coordinate installation of metal fabrications that are anchored to concrete or masonry, or that receive work specified by other Sections. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry.

C. Field Measurements: Field verify dimensions prior to fabrication.

D. Coordinate selection of shop primers with galvanizing, and with paintings to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and paintings are compatible with one another.

1.04 SUBMITTALS

A. Shop Drawings: Submit Shop Drawings indicating provided materials, dimensions, anchoring detail, and details of termination or connection to adjacent construction. Indicate items that are purchased from a manufacturer and items that are shop fabricated. Indicate component parts requiring Project site fabrication or assembly.

B. Product Data: Submit Product Data for manufactured items. Submit Product Data for primers and finishes.

C. Material Samples: Submit Samples of primers and finishes on fabricated items.

- D. Fabricator qualifications per Article “Quality Assurance”.
- E. Welding:
 - 1. Welder’s Certificates: Field welders shall be Project certified in accordance with AWS D1.1.
 - 2. Welding Material Certification: Provide certificate that welding material complies with specifications.
- F. Research/Evaluation Reports: ICC-ES for post-installed anchors.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Firm with a minimum five year experience in successfully producing metal fabrications similar to that shown on the drawings.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D-1.1– Structural Welding Code – Steel.
 - 2. AWS D1.3 - Structural Welding Code - Sheet Steel.
- C. Preassemble items in shop to greatest extent possible to minimize field welding. Mark units for reassembly and coordination of installation. Use marking method compatible with galvanizing.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Store miscellaneous metal items above grade on platforms, skids, or other required supports.
- B. Protect from damage and from corrosion, dirt, grease and other foreign matter.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Structural Steel Shapes: ASTM A36.
- B. Rolled Steel Plates: ASTM A36. Plates to be bent or cold-formed shall conform to ASTM A283, Grade C.
- C. Round HSS: ASTM A500 Grade B or C.
- D. Square and Rectangular HSS: ASTM A500 Grade B or C.

- E. Steel Pipe: ASTM A53 Type E or S, Grade B, standard weight (Schedule 40), unless otherwise noted. Black finish.
- F. Steel Sheet: ASTM A1008 or ASTM A1011.
- G. Steel Bolts: ASTM A307, Grade A, or F3125 with hex steel nuts per ASTM A563 and washers. Galvanized in accordance with ASTM A153 for exterior locations.
- H. Steel Bars: Conforming to ASTM A108 or ASTM A575.
- I. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A47, or cast steel, ASTM A27. Provide bolts, washers, and shims, hot-dip galvanized per ASTM A153.
- J. Nonshrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- K. Concrete Materials:
 - 1. Concrete per Section 03 3000, Cast-in-Place Concrete.
 - 2. Welded wire fabric and reinforcing per section 03 2000, Concrete Reinforcing.

2.02 FABRICATION

- A. General:
 - 1. Preassemble items in the shop to greatest extent possible. Use connections that maintain structural value of joined pieces. Mark units for reassembly and installation.
 - 2. Cut, drill, and punch metals cleanly and accurately. Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated or specified. Remove sharp and rough areas on exposed surfaces. Form exposed work with accurate angles and surfaces and straight edges. Form exposed connections with hairline joints, flush and smooth. Locate joints where least conspicuous.
- B. Welding:
 - 1. Weld connections unless otherwise indicated.
 - 2. Weld corners and seams continuously and in accordance with requirements of AWS D1.1 Structural Welding Code. Welds shall be inspected as required in Section 05 1200: Structural Steel Framing.

3. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.

2.03 PREPARATION FOR GALVANIZING

- A. Fabricate to the largest size possible and whenever possible use slip joints to minimize field welding.
- B. Fabricate structural steel in accordance with Class I, II, III guidelines as described in AGA's Recommended Details for Galvanized Structures, to facilitate galvanizing process. Corners of gussets, stiffeners, and bracing shall be cropped to allow free flow of zinc during galvanizing process.
- C. Remove welding slag, splatter, anti-splatter compounds and burrs prior to delivery for galvanizing.
- D. Marking for Identification: Avoid unsuitable marking paints for identification, such as oil based paints and markers and crayon markers. Use water soluble paints or markers acceptable to galvanizer or steel tags wired to the work.
- E. Masking: Use masking materials recommended by the American Galvanizers Association (AGA) to produce ungalvanized areas for field welding and at slip critical bolts.
- F. Galvanize fabrications per Section 05 5013, Hot-Dip Galvanizing, in accordance with ASTM A123 and ASTM A153.

2.04 SHOP FINISH

- A. Metal fabrications shall be provided with a coat of primer, except those indicated to be hot-dip galvanized.
- B. Primers:
 1. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
 2. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
 3. Minimum dry film thickness of primer shall be 2.0 mils.
- C. Preparation for Primer Painting: Miscellaneous ferrous metal, except items specified galvanized, shall be thoroughly cleaned and prepared for painting, including removal of shipping oils or protective coatings, mill scale, grease, dirt and

rust. Prepare in accordance with SSPC recommendations. Deliver to Project site primed or galvanized as indicated, and ready to receive Project site applied finishes.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine the areas where metal fabrications are to be installed. Notify the OAR in writing of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Provide anchorage devices and fasteners as indicated in the drawings and where necessary for securing miscellaneous metal fabrications to in-place construction.
- B. Cut, drill, and fit as required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop-welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of hot-dip galvanized fabrications intended for bolted or screwed field connections.
- D. Alignment: Verify alignment of items with adjacent construction. Coordinate related work.
- E. Grout: Follow manufacturer's recommendations for substrate preparation and application.
- F. Corrosion Protection: Coat concealed surfaces of metals that will come into contact with grout, concrete, masonry, or wood, with a heavy coat of bituminous paint or zinc chromate primer. Protect dissimilar metals from galvanic corrosion by pressure tapes, coating, or isolators.

3.03 FIELD WELDING

- A. Preparation of Weld Area of Galvanized Fabrications: Remove masking from fabrications. Remove remaining zinc coating between one inch and four inches from both sides of members to be welded, by grinding back the zinc coating, burning the zinc away or pushing back the molten zinc from the weld area.
- B. Welding: Comply with AWS Code for procedures of manual shielded metal-arch welding, appearance and quality of welds made, methods used in correcting welding work.

1. Weld in accordance to AWS D-1.1.
 2. Weld galvanized fabrications in accordance to AWS D-19.0.
- C. Remove welding flux immediately. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surfaces matches those adjacent.
- D. Upon completion of welding plug vent, drainage and lifting holes of galvanized fabrications with appropriate diameter zinc plugs. Push in about half way by hand, and hammer to a tight fit. With a hand file or an abrasive tool, file away excess material. Repair scratches with a zinc rich coating.
1. Plug railing holes.
 2. Plug visible holes of HSS members.

3.04 ADJUSTING AND CLEANING

- A. Touch Up Damaged Surfaces:
1. Shop Painted Finishes: Comply with SSPC-PA-1 for touch-up; apply with brush to produce a minimum 2.0 mil dry film thickness.
 2. Galvanized Surfaces: Clean field welds, connections and damaged areas. Apply two coats of Carbomastic 15, by Carboline or equal product approved by OWNER's OEHS. Brush or roll to a 4 to 6 mil thickness.

3.05 CLEAN UP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.06 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 06 10 00
ROUGH CARPENTRY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Rooftop equipment bases and support curbs.
 - 2. Parapet plywood sheathing.
 - 3. Wood grounds, shims, nailers, and blocking.
 - 4. Miscellaneous plywood backing, backboards and underlayment
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 06 Section "Finish Carpentry" for nonstructural carpentry items exposed to view and not specified in another Section.
 - 2. Division 06 Section "Interior Architectural Woodwork" for interior woodwork not specified in this Section.
 - 3. Division 07 Sections pertaining to Roofing Systems and Sheet Metal Flashings.

1.03 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Wood treatment data as follows, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials:

1. Preservative Treatment by Pressure Process: AWWPA C2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWWPA C31 with inorganic boron (SBX).
 2. Preservatives shall be arsenic- and chromium-free, copper-based wood preservatives, as applicable.
 3. For each type of preservative-treated wood product, include certification by treating plant stating type of preservative solution and pressure process used, net amount of preservative retained, and compliance with applicable standards.
 4. For waterborne-treated products, include statement that moisture content of treated materials was reduced to levels indicated before shipment to Project site.
 5. For fire-retardant-treated wood products, include certification by treating plant that treated materials comply with specified standard and other requirements as well as data relative to bending strength, stiffness, and fastener-holding capacities of treated materials.
- C. Material test reports from a qualified independent testing agency indicating and interpreting test results relative to compliance of fire-retardant-treated wood products with performance requirements indicated.
- D. Warranty of chemical treatment manufacturer for each type of treatment.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Keep materials under cover and dry. Protect from weather and contact with damp or wet surfaces. Stack lumber, plywood, and other panels. Provide for air circulation within and around stacks and under temporary coverings.
1. For lumber and plywood pressure treated with waterborne chemicals, place spacers between each bundle to provide air circulation.

PART 2 - PRODUCTS

2.01 LUMBER, GENERAL

- A. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

- B. Inspection Agencies: Inspection agencies, and the abbreviations used to reference them, include the following:
1. NELMA - Northeastern Lumber Manufacturers Association.
 2. NLGA - National Lumber Grades Authority (Canadian).
 3. RIS - Redwood Inspection Service.
 4. SPIB - Southern Pine Inspection Bureau.
 5. WCLIB - West Coast Lumber Inspection Bureau.
 6. WWPA - Western Wood Products Association.
- C. Forest Stewardship Council (FSC): All lumber, where and when available, shall be Forest Stewardship Council (FSC) certified and all such products shall bear the FSC identification stamp.
- D. Grade Stamps: Provide lumber with each piece factory marked with grade stamp of inspection agency evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill.
1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece.
- E. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber, Construction or No. 2 grade or better.
1. Provide dressed lumber, S4S, unless otherwise indicated.
 2. Provide lumber with 15 percent maximum moisture content at time of dressing for 2-inch nominal thickness or less, unless otherwise indicated.

2.02 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. General: Where lumber or plywood is indicated as preservative treated or is specified to be treated, comply with applicable requirements of AWPA C2 (lumber) and AWPA C9 (plywood). Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.
1. Do not use chemicals containing chromium or arsenic.

2. For exposed items indicated to receive stained finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
- B. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 3. Wood framing members less than 18 inches above grade.
 4. Wood floor plates installed over concrete slabs directly in contact with earth.
- C. Pressure treat wood members in contact with ground or freshwater with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft.

2.03 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated wood is indicated, comply with applicable requirements of AWPA C20 (lumber) and AWPA C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL; U.S. Testing; Timber Products Inspection, Inc.; or another testing and inspecting agency acceptable to authorities having jurisdiction.
1. Treatment Types: Interior Type A for protected wood and Exterior for wood exposed to weather.
- B. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.

2.04 DIMENSION LUMBER

- A. General: Provide dimension lumber of grades indicated according to the ALSC National Grading Rule (NGR) provisions of the inspection agency indicated.
- B. Other Framing: Provide the following grades and species:
1. Grade: No. 2.
 2. Species: Spruce-pine-fir south; NELMA.

3. Species: Douglas fir-larch north; NLGA.
4. Species: Hem-fir north; NLGA.
5. Species: Spruce-pine-fir north; NLGA.
6. Species: Southern pine; SPIB.
7. Species: Douglas fir-larch; WCLIB or WWPA.
8. Species: Hem-fir; WCLIB or WWPA.
9. Species: Douglas fir south; WWPA.
10. Species: Any species above.

2.05 BOARDS

- A. Exposed Boards: Where boards will be exposed in the finished work, provide the following:
 1. Moisture Content: 15 percent maximum.
 2. Species and Grade: Hem-fir, C & Btr per WCLIB rules or C Select per NLGA or WWPA rules.
- B. Concealed Boards: Where boards will be concealed by other work, provide lumber with 19 percent maximum moisture content and of following species and grade:
 1. Species and Grade: Eastern softwoods, No. 3 Common per NELMA rules.
 2. Species and Grade: Northern species, No. 3 Common or Standard per NLGA rules.
 3. Species and Grade: Mixed southern pine, No. 2 per SPIB rules.
 4. Species and Grade: Hem-fir, Standard per WCLIB rules or No. 3 Common per WWPA rules.
 5. Species and Grade: Spruce-pine-fir, Standard per WCLIB rules or No. 3 Common per WWPA rules.
 6. Species and Grade: Western woods, Standard per WCLIB rules or No. 3 Common per WWPA rules.
 7. Species and Grade: Any species above.

2.06 MISCELLANEOUS LUMBER

- A. General: Provide lumber for support or attachment of other construction, including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping, and similar members.
- B. Fabricate miscellaneous lumber from dimension lumber of sizes indicated and into shapes shown.
- C. Moisture Content: 19 percent maximum for lumber items are not specified to receive wood preservative treatment.
- D. Grade: For dimension lumber sizes, provide No. 3 or Standard grade lumber per ALSC's NGRs of any species. For board-size lumber, provide No. 3 Common grade per NELMA, NLGA, or WWPA; No. 2 grade per SPIB; or Standard grade per NLGA, WCLIB or WWPA of any species.

2.07 SHELVING AND CLOTHES RODS

- A. Shelving: Provide 1-inch nominal-thickness boards of species and grade indicated above for exposed boards.
- B. Shelf Cleats: Provide 1-by-4-inch nominal-size boards of species and grade indicated above for exposed boards.
- C. Clothes Rods: Provide 1-1/2-inch-diameter clear, kiln-dried hardwood rods.

2.08 WOOD-BASED STRUCTURAL-USE PANELS

- A. Miscellaneous Concealed Panels: APA-rated sheathing, Exposure 1, span rating to suit framing in each location.
- B. Plywood Underlayment: Underlayment B-C Exterior with fully sanded face, thickness as indicated but not less than 1/2 inch.
- C. Miscellaneous Exposed Plywood: A-D Interior, thickness as indicated but not less than 1/2 inch.
- D. Plywood Backing Panels: For mounting electrical or telephone equipment, provide fire-retardant-treated plywood panels with grade, C-D Plugged Exposure 1, in thickness indicated or, if not otherwise indicated, not less than 15/32 inch thick.

2.09 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture. Equal

products from other manufacturers shall be acceptable as outlined in the provisions of Division 01 requirements.

1. Where miscellaneous carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A 153 or of Type 304 stainless steel.
- B. Nails, Wire, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES-272.
- D. Wood Screws: ASME B18.6.1.
- E. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated or required, flat washers.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. Discard units of material with defects that impair quality of carpentry and that are too small to use with minimum number of joints or optimum joint arrangement.
- B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted.
- C. Fit carpentry to other construction; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds, and similar supports to allow attachment of other construction.
- D. Apply field treatment complying with AWPA M4 to cut surfaces of preservative-treated lumber and plywood.
- E. Securely attach carpentry work as indicated and according to applicable codes and recognized standards.
- F. Countersink nail heads on exposed carpentry work and fill holes with wood filler.
- G. Use fasteners of appropriate type and length. Pre-drill members when necessary to avoid splitting wood.
- H. Coordinate all installation components integral to roofing systems and exterior sheet metal flashings, including the shop drawings, to provide for a complete and compatible installation for all final assemblies.

3.02 WOOD GROUNDS, NAILERS, BLOCKING, AND SLEEPERS

- A. Install where shown and where required for screeding or attaching other work. Cut and shape to required size. Coordinate locations with other work involved.
- B. Attach to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.03 INSTALLATION OF STRUCTURAL-USE PANELS

- A. General: Comply with applicable recommendations contained in APA Form No. E30, "APA Design/Construction Guide: Residential & Commercial," for types of structural-use panels and applications indicated.
 - 1. Comply with "Code Plus" provisions of above-referenced guide.

3.04 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

SECTION 06 2000
FINISH CARPENTRY

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Finish carpentry.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 06 1000: Rough Carpentry.
3. Section 06 4000: Architectural Woodwork.
4. Section 08 7100: Door Hardware.
5. Section 09 2900: Gypsum Board.

1.02 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings of each item of finish carpentry and millwork, indicating materials, dimensions, construction, and anchorage details.

1.03 QUALITY ASSURANCE

A. Comply with the following as a minimum requirement:

1. Douglas fir finish lumber shall be manufactured and graded in accordance with WCLIB - Standard Grading and Dressing Rule No. 17.
2. Redwood finish lumber shall be manufactured and graded in accordance with RIS - Standard Specifications for Grades of California Redwood Lumber.
3. Hardwood finish lumber shall be manufactured and graded in accordance with NHLA - Rules for the Measurement and Inspection of Hardwood and Cypress Lumber.
4. Softwood Plywood: Plywood shall comply with APA - Product Standard PS 1. Plywood shall be grade marked by APA.

5. Products and installation shall comply with the North American Architectural Woodwork Standards (NAAWS) for the Grade or Grades specified.
- B. Finish lumber shall be kiln-dried according to recognized methods for the thickness and species. Lumber one inch thick or less shall be dried to an average moisture content of not more than 13 percent. Lumber 1-1/4 inches to 2 inches in thickness shall be dried to an average moisture content of not more than 15 percent.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the Project site in undamaged condition, stored in fully covered, well ventilated areas, and protected from extreme changes in temperature and humidity.
- B. Interior millwork and finish carpentry shall not be installed unless interior building temperature and humidity levels are within the ranges recommended by the manufacturer and/or recognized standards.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Douglas Fir: Interior trim, solid lumber shelves, partitions, door frames and other concealed members of interior finish; NAAWS Economy Grade.
- B. Hardwood: Birch, maple firsts and seconds.
 1. Birch: NAAWS Custom Grade.
 2. Maple: NAAWS Custom Grade.
- C. Softwood Plywood: Except where otherwise specified, AWI Custom Grade, Douglas fir unless otherwise indicated.
- D. Hardwood Plywood: NAAWS Premium Grade, species as indicated.
- E. Redwood: Exterior millwork, except framing lumber, shall be clear heartwood redwood. Where installed in direct contact with earth or provided for exterior storage units, install Foundation Grade.
- F. Perforated Hardboard Panels: Panels shall be 1/4 inch thick tempered hardboard, SIS with 1/4 inch diameter holes spaced one inch on center.

2.02 FABRICATION

- A. The means of fastening various parts together shall be concealed in finished Work. Work which is curved shall be fabricated from solid stock, or if veneered, shall be bent to a uniform radius.

PART 3 - EXECUTION

3.01 GENERAL

- A. Interior and exterior wood, millwork, blocking, and lumber shall be installed level, plumb, and true to line. Members shall be neatly and accurately scribed in place, maintaining full widths of end members, wherever possible. Trim shall be installed in full lengths, without piecing, except where use of single lengths is not required. Butt joints, if necessary, shall be beveled. Exterior angles shall be mitered, and interior angles of molding parts coped. Nails shall be set for putty. Grain and color of adjoining interior finish shall match adjacent finishes. Where Work specified in this section adjoins other Work, provide a neat tight joint.
- B. Interior and exterior finish carpentry and other fixed wooden equipment having hammer marks or other visible damage will be deemed defective Work.
- C. Staff or brick moulds of exterior wood doorframes shall be attached to frames after frames have been set and caulked. Moulds shall be mitered at corners and coped to sills, accurately secured in place with finish nails, and nails set.

3.02 INSTALLATION

- A. Install Work of this section as specified in the North American Architectural Woodwork Standards.
- B. Wood shoe base shall be fitted and temporarily tacked in place until floor covering is installed. Provide and install corner fillets, same contour and materials as shoe base, in corners where shoe base is installed.
- C. Platform Front: Plywood at platform front and adjoining steps in Multi-Purpose Building shall be provided with face veneers of unselect birch. Trim and frames shall match face veneer of panels. Joints shall be V-shaped where indicated.
- D. Door Frames: Frames shall be installed plumb and true, solidly blocked, reinforced for butts and hardware, and shall be fastened to structural frame with 16d set finish nails at not more than 24 inches on centers. Nails securing exterior door and window frames shall be cement coated. Doorframes shall be dadoed together at the head.

- E. Sealing of Joints: Joints between exterior frames and adjoining surfaces shall be primed before sealing.

3.03 CLEAN UP

- A. Remove debris, rubbish and waste material and legally dispose of off the Project site.

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 06 4000

ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Architectural woodwork, casework, trim, hardware, countertops, and shelving as indicated on Drawings.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 06 1000: Rough Carpentry.
3. Section 06 2000: Finish Carpentry.
4. Section 09 9000: Painting and Coating.
5. Section 22 1000: Plumbing.

1.02 DEFINITIONS

- A. "Sustainably managed" is defined as "forests that are being managed through a professionally administered forestry management plan in which timber growth equals or exceeds harvesting rates in both quantity and quality, protecting rivers and streams from degradation, minimizing damage to the forest when harvesting and promoting biodiversity".

1.03 SYSTEM DESCRIPTION

- A. Design Requirements: Provide wood products from certified sustainably harvested sources.

1.04 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings of casework indicating materials and hardware, details of construction, dimensions, methods of fastening and installation details. Shop Drawings shall bear a Woodwork Institute (WI) Certified Compliance Label indicating that Shop Drawings fully meet requirements of the North American Architectural Woodwork Standards (NAAWS) grade or grades

specified. Shop Drawings shall indicate grounds, backing, blocking, sleepers and other items required for installation of casework, which are to be provided and installed as part of the Work.

- B. Certificates: Provide a WI Certified Compliance Certificate certifying that materials, fabrication and installation will comply with the specified requirements.
- C. Material Samples: Submit 2-inch by 3-inch plastic laminate and solid surfaces color Samples of manufacturer's entire color range.
- D. Submit manufacturer's product data for adhesives and finishes. Indicate VOC limits of the product. Submit MSDS highlighting VOC limits.
- E. Forest Stewardship Council (FSC): Provide letter of certification signed by lumber supplier. Indicate compliance with FSC "Principles for Natural Forest Management" and identify certifying organization.
- F. Closeout Submittals: Provide a WI Certified Compliance Certificate for Installation.

1.05 QUALITY ASSURANCE

- A. Comply with the North American Architectural Woodwork Standards (NAAWS), latest edition, published jointly by the Architectural Woodwork Manufacturer's Association of Canada and the Woodwork Institute of California, grades as specified herein.
- B. Each elevation of casework shall bear a WI Certified Compliance Label indicating that casework fully meets requirements of the AWS grade specified.
- C. Each plastic laminate countertop and/or solid surface top shall bear a WI Certified Compliance Label indicating tops fully meet requirements of the AWS grade specified.
- D. Mock-ups: When required by the Architect, submit a full-scale base cabinet, countertop, and wall-hung cabinet, illustrating joinery and plastic laminate finish. Base cabinet shall incorporate a drawer, an adjustable shelf, and a door. Wall-hung cabinet shall incorporate two doors, one adjustable shelf and finished end, including required hardware.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the Project site in undamaged condition, stored in fully covered, well ventilated areas, and protected from extreme changes in humidity and temperature. Refer to the North American Architectural Woodwork

Standards (NAAWS) for recommended care and storage.

- B. In event of damage immediately furnish necessary repairs or replacements.

1.07 PROJECT CONDITIONS

- A. Store indoors, in ventilated areas with constant but minimum temperature of 60 degrees F. and maximum relative humidity of 25 percent to 55 percent. Do not install casework until building is enclosed and ambient conditions are within the temperature and humidity range to be expected during occupancy. Acclimatize materials to the installation temperature and humidity for at least 72 hours prior to installation. Maintain conditions until Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Plastic Laminate Faced Cabinets:
 - 1. Plastic laminate: High pressure plastic laminate conforming to NEMA standard LD-3; Grade HGS 0.048 inches at horizontal surfaces, Grade VGS 0.028 inches at exposed vertical surfaces and edge bands, and HGP 0.039 inch minimum for post-formed countertops.
 - 2. Particle Board Core Material: 45 lb. density, conforming to ANSI A208.1, Table 1, Grade 1-M-2.
 - 3. Solid Lumber:
 - a. Solid lumber for exposed members, drawers, trays and special details shall be Clear birch or maple.
 - b. Unexposed solid lumber for concealed webs or structural members shall be of Douglas Fir., alder or birch.
 - 4. Softwood Plywood: Rotary cut exterior type A-C grade softwood plywood complying with PS1.
 - 5. Hardboard: Factory finished pressure sealed hardboard conforming to the requirements of PS 58. Oil tempered hardboard shall conform to CS 251.
 - 6. Cabinet Liner: Semi-exposed surfaces shall be finished with 0.020 inch high-pressure laminate cabinet liner, conforming to NEMA Standard LD-3.

7. Edge Banding:
 - a. PVC, 0.6 mm at cabinet sides, top, bottom divisions and shelves, 3 mm at doors, drawer fronts and false fronts.
 8. Glass Doors: 1/4 inch laminated safety glass.
 9. Adhesive: Type II water-resistant, rigid type glue of formula conforming to PS 51.
 10. Sealer: Thompson Water Seal 101, Watco Oil, Zinsser, or equal.
 11. Base: Cover toe spaces with typical wall base unless otherwise indicated.
- B. Wood Casework:
1. Sheets:
 - a. Hardwood Plywood: ANSI/HPVA – HP-1.
 2. Solid Lumber:
 - a. Concealed portions: Any species of sound, dry, solid stock.
 - b. Semi-exposed portions: Hardwood veneer of the same species as exposed material with a specific gravity in excess of 0.37.
 - c. Exposed portions: Select White Birch, well matched for color and grain.
 3. Hardboard: Factory finished, pressure sealed hardboard conforming to requirements of PS 58.
 4. Edge Banding: Same species of wood as adjacent to exposed surfaces.
- C. Countertops:
1. Solid Surfaces: Filled cast polymeric resin panel, with homogeneous composition throughout its thickness.
 - a. Corian.
 - b. Formica.
 - c. Wilsonart.
 - d. Equal.
- D. Hardware:

1. Drawer Slides:
 - a. Drawers and box drawers, up to 24 inches wide: Accuride 3832E, Blum, Hafele, or equal.
2. Door Mutes: Rubber, approximately 1/4 inch diameter, colors to match adjacent finish.
3. Plastic Grommets: Doug Mockett, Alliance Express, Rockler, or equal; color as selected by Architect.
4. Adjustable Shelves with Clips: Adjustable shelf supports (EDP type, unless otherwise noted) set in 5 mm holes spaced 32 mm on center:
 - a. Hafele America, Co., No. 282.04.711, Blum, Hettich, or equal.
 - b. Hafele America, Co., No. 282.24.13, Blum, Hettich, or equal.
5. Hinges: Five-knuckle overlay hinge with hospital tip - Rockford 376, or equal.
6. Cabinet Locks:
 - a. Door Locks: Pin tumbler type – CompX National No. C8173, Olympus 100DR x 12-1 strike, CCL Security Products, or equal.
 - b. Locks for Sliding Doors: National No. C8142 x thimble strike, Olympus 300 SD x thimble strike, CCL Security Products, or equal.
 - c. Drawer Locks: CompX National C8179brass strike, Olympus 200 DW x 12-1 strike, CCL Security Products, or equal.
 - d. Cabinet locks shall be flush with surface of door and protrude no greater than 3/16 inch.
7. Top-hung Hardware Assembly for Sliding Doors: Grant No. 6064, Hafele, Blum, or equal.
8. Track for Sliding Doors: K & V 455 x or 455.55, Hafele, Blum, or equal.
9. Pull Flush Ring at Drawers behind Doors: Safe No. 6116, Trimco 24, Quality, or equal.
10. Pulls: Quality No. 179 x 180, Trimco No. 553P, Hafele, or equal.
11. Catches: Magnetic type - Epco No. 592, Lawrence No. SC1364-AL, or equal.

12. Four-way Tension Catch: Glynn-Johnson GJ21A, Trimco, Quality, or equal.
13. Noiseless Catch:
14. Elbow Catch: Schlage SP2A3, or equal.
15. Bolts: Surface type, Quality B6, Trimco No. 4856-6, or equal.
16. Brackets and Shelf Strip for Glass Shelves: K & V No. 80 x 180, Garco 604 x 686, or equal.
17. Shelf Standards and Brackets: K & V No. 255 x 256, line bored holes for pins as approved by AWI Standards Stanley No. 798 x 799, steel zinc plated, or equal.
18. Card Holders for Drawers: Corbin No. 1913-1/4H, Garco No. 853, or equal.
19. Hanger Rods: 1-1/16 inches minimum diameter metal tubing, aluminum or stainless steel clad, KV660; heavy wall steel tubing KV770, Stanley, or equal.
20. Hanger Rod Flanges: KV757, or flanges KV734, KV735; Ronther Reiss R44-55; or equal.
21. Hardware Finish: With exception of finish hardware items which have finishes specified, hardware shall be furnished with dull chrome US 26D or dull stainless steel US 32D finish.
22. Keying:
 - a. Key locks inside one room alike. Furnish three keys for each lock keyed separately, and 2 keys for each lock in keyed alike groups. Master keys shall be tagged and delivered to the Inspector. Locks and keys shall be stamped with coded set number / direct digit.
 - b. Master keys shall be National GM2.

2.02 FABRICATION

- A. Wood Casework: Manufacture in accordance with AWI Architectural Woodwork Standards, Custom Grade, except, modified as follows:
 1. Exposed surfaces for transparent finish shall be plain sliced select white birch.
 2. Exposed Interiors: surfaces at the interiors of open cabinets and cabinets

with glass doors shall be of the same species and grade as exposed portions.

3. Semi-exposed surfaces shall be natural birch.
4. Edge banding shall be wood edge bands of same species as adjacent exposed faces.
5. Cabinet doors shall be particleboard core a minimum of 3/4 inch thickness, unless otherwise noted. Interior faces of cabinet doors shall be same species and grade as exposed surfaces. Cabinet doors shall be flush overlay.
6. Hardwood Countertops:
 - a. Hardwood counters shall be fabricated of Number One Clear birch or maple boards from 6 inches to 10 inches wide, of thickness indicated, tongued and grooved, and glued together with waterproof glue, reinforced with cleats or other method to prevent warping or opening of joints. Top surfaces where indicated shall be shaped to drain towards sink, with slope of 1/4 inch.
 - b. Back, ends and caps shall be 3/4 inch thick, with wide sections constructed same as top without reinforcing strips. Joints between top, back, and vertical corners of back where indicated, shall be fabricated of tongue and groove cove members and glued. Sinks, where indicated, shall be set flush with bottom of drainboards and caulked continuously.
7. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1.
 - a. Manufacturers:
 1. Avonite Surfaces.
 2. E. I. du Pont de Nemours and Company.
 3. Formica Corporation.
 4. Wilsonart International.
 5. Equal.
 - b. Type: Provide Standard Type.
 - c. Integral Sink Bowls: Comply with ISSFA-2 and ANSI Z124.3, Type 5 or Type 6, without a precoated finish.
 - d. Colors and Patterns: As selected by Architect from manufacturer's

full range.

- e. Butt splash or seamless (coved) backsplash.
- f. Provide drip groove.

2.03 FINISHING

- A. Wood casework and wood components of laminated plastic casework shall be factory finished. Exposed surfaces shall be finished with one coat of lacquer sealer and 2 coats of finish lacquer. Unexposed materials such as backs, webs, back of tops, and the like, shall be sealed with one oil base prime coat. Semi-exposed wood surfaces such as drawers shall be finished with one coat of sanding sealer and one coat of clear gloss lacquer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install Work of this section as specified in the North American Architectural Woodwork Standards (NAAWS), grade to match the grade of the work to be installed.
- B. Cabinets: Install cabinets level, plumb, and secure to walls. Exposed screws shall have finish washers.
- C. End Panels and Fillers: Furnish to match exposed surfaces and accurately scribe to walls and neatly and securely fit to cabinets.
- D. Completion: Upon completion of installation, cabinets including drawers and shelves shall be cleaned. Doors and drawers shall operate easily and freely.
- E. Scribe plastic laminated cabinets to walls. Installation of surface-applied moldings is not permitted.
- F. Coordinate sink and penetration locations with 22 1000 Plumbing.
- G. Install solid surface countertops per NAAWS custom grade.

3.02 CLEAN UP

- A. Remove debris, rubbish and waste material and legally dispose of off the Project site.

3.03 PROTECTION

A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 07 2100
THERMAL INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Thermal batt insulation for exterior walls and under roof decks.
2. Thermal batt insulation in furring at concrete or masonry walls.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 07 1326 - Self-Adhering Sheet Waterproofing.
3. Section 09 2216 - Non-Structural Metal Framing.
4. Section 09 2423 – Cement Plaster and Metal Lath.
5. Section 09 8100 – Acoustical Insulation.

1.02 SUBMITTALS

A. Product Data:

1. Material List: Provide a list of materials for installation under this section.
2. Provide manufacturer's printed Product Data for each type insulation and accessory.

B. Manufacturer's Instructions: Submit manufacturer's printed installation instructions.

C. Certification: Provide certification that insulation materials conform to requirements of CBC Chapter 26.

D. Recycled Content: Provide certification that insulation materials contain a minimum 30 percent recycled materials.

1.03 QUALITY ASSURANCE

- A. Surface Burning Characteristics: Flame spread rating shall not exceed 25 and smoke density shall not exceed 50 when tested in accordance with ASTM E84.
- B. Combustion Characteristics: Rated as non-combustible when tested in accordance with ASTM E136.
- C. Comply with following as a minimum requirement:
 - 1. ASTM C209 – Standard Test Methods for Cellulosic Fiber Insulating Board.
 - 2. ASTM C553: Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
 - 3. ASTM C578: Specification for Rigid, Cellular Polystyrene Thermal Insulation.
 - 4. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.
 - 5. ASTM D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
 - 6. ASTM D1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics.
 - 7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 8. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C.
- D. CHP Low-Emitting Materials Table: Materials submitted for building insulation must be listed as low emitting on the CHPS website, www.CHPS.net, or must be tested by an independent laboratory to meet CHPS requirements. Components of an assembly must meet CHPS requirements individually or in an assembly.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Project site and store in a safe, dry place, with labels intact and legible at time of installation.
- B. Protect building insulation materials from damage.

1.05 PROJECT CONDITIONS

- A. Avoid exposure to humidity and moisture. Protect from exposure to sunlight.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Owens Corning.
- B. Johns Manville.
- C. CertainTeed Corporation.
- D. The DOW Chemical Company.
- E. DiversiFoam Products.
- F. Equal.

2.02 MATERIALS

A. General:

- 1. Provide Unfaced, friction-fit batt insulation where both sides of installation are enclosed.
- 2. Provide batt insulation with integral vapor barrier when one side of installation will be unenclosed.
- 3. Provide batt insulation with integral vapor barrier where at least one side of installation will be exposed to high humidity, such as showers.
- 4. Recycled content shall be a minimum of 30 percent.

B. Mineral Fiber Batt Insulation:

- 1. Unfaced Mineral Fiber Batt Insulation: Provide friction-fit, unfaced mineral fiber batts. Insulation shall consist of mineral fibers, glass or slag, and thermosetting resins complying with ASTM C665, Type I.
- 2. Faced Mineral Fiber Batt Insulation: Provide mineral fiber batts with FSK-25 vapor barrier ASTM C665, Type III, Class A, Category 1, with vapor-retardant membrane facing.
- 3. Fasteners for Attaching Insulation to Wood Framing:

- a. For faced batt insulation provide one of following types of staples: Stainless steel, monel, or copper-coated steel, size as required by manufacturer or applicable code.
 - b. For unfaced batt insulation provide 18 gage, minimum, galvanized steel wire where required to maintain proper insulation placement.
- C. Extruded-Polystyrene (XPS) Board Insulation: ASTM C578, Type X, thickness as indicated on drawings.
- 1. Manufacturers:
 - a. DiversiFoam Products, Certifoam.
 - b. Dow Chemical Company, Thermax.
 - c. Owens Corning, Foamular.
 - d. Equal.
 - 2. Physical Properties:
 - a. Density, ASTM D1622: Not less than 1.35 pounds per cubic foot.
 - b. Surface Burning Characteristics, ASTM E84: Flame spread less than 25, smoke developed no greater than 50.
 - c. Compressive Strength, ASTM D1621: 25 psi minimum.
 - d. Thermal Resistance, ASTM C1363: R 5 minimum per inch of thickness.
 - e. Water Vapor Transmission, ASTM E96: Less than 0.03 perms.
 - f. Water Absorption by Volume, ASTM C209: Maximum 0.10 percent.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine Work to verify suitability to receive insulation. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General:

1. Fit batt insulation, of R-value indicated on Drawings, snugly between framing members.
2. Maintain total insulation integrity over entire area to be insulated, including areas between closely spaced members.
3. Extend full thickness insulation over entire area to be insulated. Furnish manufacturer's recommended clips to tightly fit batts at joints.
4. Cut and fit batt insulation tightly around pipes, conduits and penetrations.
5. Do not compress batt insulation in excess of 10 percent (R-19 may be installed in 2 by 6 stud walls).
6. Prevent batt insulation from sagging during and after installation by installing adequate wire.
7. Metal door and window frames in acoustically insulated walls shall be filled with insulation, unless otherwise indicated.
8. Where vapor barrier is provided, install with vapor barrier facing room.
 - a. Batts in Metal Framing: Provide friction-fit batts tightly fitted to stud webs and to metal furring.
 - b. Batts under Metal Roof Decks where underside of insulation will be exposed install foil-faced flanged-type insulation batts and staple flanges together at maximum 4-inch centers and seal joints at abutting vertical surfaces with a pressure-sensitive plastic tape. Where underside of insulation will be inaccessible, install secure with spindle anchors. Provide 18 gage galvanized string wires under batts wherever necessary to prevent sagging. Stretch wire taut.
 - c. Batts in Horizontal or Sloped Applications: Provide tightly stretched string wires along center of horizontal or sloping batts where support spacing exceed 16 inch on centers.
 - d. Batts in Ceiling Framing: Install batts between joists, so top of insulation is level with top of framing members. Do not install insulation over recessed lighting fixtures, speakers, or other heat producing elements in ceilings. At junction boxes, access panels, and other items requiring access from above or below ceiling, cut insulation on each side to fit item and install loosely on top. Fit

insulation snugly around ducts, conduits, pipes, and other items projecting through ceiling construction.

9. Install polystyrene board as required by Section 07 1326.

3.03 PROTECTION

- A. Protect Work of this section until Substantial Completion.

3.04 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

END OF SECTION

SECTION 07 2200

ROOF AND DECK INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Roof and non-tapered polyisocyanurate roof insulation.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 06 1000 - Rough Carpentry.
3. Section 07 6000 - Flashing and Sheet Metal.

1.02 REGULATORY REQUIREMENTS

- ###### A. Comply with requirements of authorities having jurisdiction over the Work.

1.03 SUBMITTALS

- ###### A. Shop Drawings: Submit roof plans and details. Include roof dimensions, drain and scupper locations, gutter locations, and the layout of insulation boards. Provide details indicating components, attachment and insulation thickness. Provide calculations indicating the average R-value for the system. Indicate drainage patterns and slopes required.

- ###### B. Product Data: Submit manufacturer's data substantiating the insulation complies with specified requirements.

- ###### C. Installation Instructions: Submit manufacturer's installation instructions.

1.04 QUALITY ASSURANCE

- ###### A. Comply with the following as a minimum requirement:

1. ASTM C 1289 - Faced Rigid Cell Polyisocyanurate Thermal Insulation Board; Type II Class 1 Grade 2.
2. Provide systems complying with requirements for FM Class 1.
3. Provide systems complying with requirements for UL Class A.

4. Achieve a minimum thermal resistance value of R-7 for re-roofing projects, unless noted otherwise.
 5. UL 2818 Green Guard Gold certification. Gold Standard for Chemical Emissions for Building Materials.
- B. Installer Qualifications: Minimum five years experience installing specified type of insulation under roofing systems, and certified by the insulation manufacturer to install the Work of this section.
- C. Pre-installation Meetings: In accordance with related Division 01 sections, conduct a pre-installation meeting on the Project site.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original sealed and labeled containers.
- B. Avoid exposure to sunlight and the elements.
- C. Handle materials in a manner to avoid damage or contamination with moisture or foreign matter.

1.06 PROJECT CONDITIONS

- A. Environmental requirements:
1. Install products in strict accordance with manufacturer's recommendations.
 2. Do not install any materials when water in any form is present on the deck or materials are wet. Do not install any materials if precipitation is forecast and partially completed Work will be left unprotected.
 3. Do not install the Work of this section if the temperature of the roof deck is below 40 degrees F.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Insulation: Rigid polyisocyanurate foam insulation, with specially formulated organic/inorganic facers as manufactured by:
1. Dyplast Products.
 2. Celotex Insulation.
 3. GAFTEMP.
 4. Sarnatherm (Atlas ACII).

5. Equal.

2.02 DESCRIPTION

- A. Tapered Roof insulation shall provide minimum per foot slope and provide minimum insulation values as indicated on drawings.
- B. Roof and Deck insulation shall consist of polyisocyanurate foam panels, chemically bonded during the foaming process to special organic/inorganic facers on the top and bottom surfaces, and shall conform to the following:

<u>PROPERTIES</u>	<u>TEST METHOD</u>	<u>VALUE</u>
Compressive Strength	ASTM D 1621	20PSI min.
Dimensional Stability (Thermal and Humid Aging)	ASTM D 2126 (-4 degrees F, amb RH) (158 degrees F, 97 percent RH) (200 degrees F, ambient RH)	Less than 2 percent linear change Less than 2 percent linear change Less than 2 percent linear change
Flexural Strength (Modulus of Rupture) (Break load)	ASTM C 203	40 PSI min. 17 PSI min.
Tensile Strength (Perpendicular to surface)	ASTM C 203	500 PSF min.
Water Absorption	ASTM C 209	
Water Vapor Transmission	ASTM E 96	
Core Foam Flame Spread	ASTM E 84	

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify suitability of substrates to receive the Work. Do not proceed until unsatisfactory conditions have been corrected.
- B. Verify suitability of related Work such as the following:
 - 1. Roof drains and scuppers are properly installed.
 - 2. Roof curbs, nailers, equipment supports, vents, and other items penetrating the roof are of the proper height, properly prepared and fastened to the substrate.

3. Concrete surface is sufficiently dry, free from extremes in pH, properly primed and free of fines, edges, or voids.

3.02 INSULATION APPLICATION

A. General:

1. Install the Roof and Deck insulation in accordance with the manufacturer's recommendations and to provide the R values indicated. Butt the panels snugly together.
2. Start boards from either the roof drain or the high point depending on the insulation system. Stencil direction of slope on each board. Stagger joints of underlayment boards from insulation boards.
3. Cut valleys and hips. Field cut crickets from insulation boards. Install valleys, hips, and crickets as required for R values and drainage.

- B. Roofing Systems: Fasten insulation with a method recommended by the manufacturer. Method of attachment shall provide a minimum FM I-90 Wind Uplift Rating.

3.03 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.04 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 07 2600
VAPOR BARRIERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Vapor barrier and accessories for installation under concrete slabs.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 3000: Cast-in-Place Concrete.
3. Division 09: Finishes; Flooring Sections.

1.02 REFERENCES

A. American Concrete Institute (ACI) Publication:

1. ACI 302.2R - Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

B. ASTM International (ASTM):

1. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
2. ASTM D1709 - Standard Test Methods of Impact Resistance of Plastic Film by the Free-Falling Dart Method.
3. ASTM E154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth under Concrete Slabs.
4. ASTM E1643 - Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
5. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation instructions for vapor barrier and accessories.
- B. Samples:
 - 1. 12 inch by 12 inch vapor barrier samples.
 - 2. Pressure-Sensitive Tape: 12 inch long sample.
- C. Test Reports: Conducted by nationally recognized independent testing agency indicating conformance with specified performance requirements.

1.04 QUALITY ASSURANCE

- A. ASTM tests referenced in this Section shall be performed on a single production roll per ASTM E1745 Section 8.1. Submit third party documentation certifying this requirement.
- B. Pre-Installation Conference: CONTRACTOR shall coordinate and conduct pre-installation conference in accordance to Section 01 3119, Project Meetings, to review the progress of construction activities and preparations for the installation of vapor barrier.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, handle and protect in accordance with manufacturer's instructions and recommendations.
- B. Deliver materials in manufacturer's packaging with labels intact.
- C. Store materials in a clean and dry area.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Multi-layer plastic extrusion manufactured with high grade prime, virgin, polyolefin resins. Thickness shall be 15 mils minimum.
 - 1. Stego Wrap by Stego Industries LLC.
 - 2. Perminator by W.R. Meadows.
 - 3. Ecoshield-E by Epro.

4. Husky Yellow Guard by Poly-America.
 5. Equal.
- B. Physical Properties:
1. Maintain permeance of less than 0.01 Perms [grains/(ft² · hr · inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
 2. Class Rating per ASTM E1745: Class A.
 3. Puncture resistance per ASTM D1709: 2200 g or higher.
 4. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1
- C. Accessories: Provide manufacturer recommended accessories for seams, penetrations and perimeter edges, including tapes, mastics, termination for a complete vapor barrier installation per ASTM E1643.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions: Examine subsoil and notify OAR of deficiencies detrimental to proper vapor barrier installation; do not proceed until corrected.

3.02 INSTALLATION

- A. Install vapor barrier in accordance ASTM E1643 and manufacturer's instructions.
1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
 2. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise, where obstructed by impediments, such as dowels, waterstops, or any other site condition requiring early termination of the vapor barrier. At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself using manufacturer ASTM E1643 compliant accessory designed to adhere to concrete. Seam tape shall not be used for sealing the vapor barrier to the foundation wall, grade beam or slab.
 3. Overlap joints 6 inches and seal with manufacturer's seam tape.
 4. Seal vapor barrier penetrations per manufacturer's instructions.
 5. Avoid the use of non-permanent stakes driven through the vapor barrier.

- B. Prior to concrete placement inspect vapor barrier for damage. Clean damaged areas and with vapor barrier material cut a minimum 6 inches larger than damaged area on all sides. Seal to main vapor barrier with continuous seam tape.

3.03 CLEAN UP

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 07 2719
PLASTIC SHEET AIR BARRIERS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Mechanically attached permeable flexible plastic sheet air barriers.
2. Flexible flashing of openings, penetrations, joints, and terminations of exterior walls and taping of seams.

B. Related Requirements:

1. Section 05 4100 – Structural Metal Stud Framing.
2. Section 06 1000 - Rough Carpentry.
3. Section 07 6000 – Flashing and Sheet Metal.
4. Section 07 9200 – Joint Sealants.
5. Section 09 2423 – Cement Plaster and Metal Lath.

1.02 REFERENCES

A. ASTM International:

1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E1677 - Standard Specification for an Air Barrier (AB) Material or System for Low-Rise Framed Building Walls.
3. ASTM E2178 – Standard Test Method for Air Permeance of Building Materials.

B. International Code Council (ICC):

1. ICC-ES Evaluation Reports.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each material and component proposed for installation.

- B. Shop Drawings: Dimensioned plans and elevations indicating:
 - 1. Complete information as to size and location of openings, sleeves, conduits, ducts, boxes, inserts, attachments, and structural interferences.
 - 2. Layout of air barrier showing sheet lapping, cutting, flashing and taping, with references to enlarged details.
- C. Installation Instructions: Submit detailed manufacturer's installation instructions.
- D. Material Samples: Submit minimum 8-1/2-inch by 11-inch samples of air barrier, and 12 inch long flashing.
- E. Test Reports: Submit Test Reports showing performance characteristics equaling or exceeding those specified.
- F. Evaluation Reports: Submit ICC-ES Evaluation Report demonstrating conformance of plastic sheet air barrier to CBC 1404.2, for use as water-resistive barrier.
- G. Qualification Statements:
 - 1. Installer: Statement from plastic sheet air barrier manufacturer indicating installer is approved, certified, or has been trained for the installation of their products.

1.04 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Plastic sheet air barrier components and accessories shall be from a single source.
 - 2. Manufacturer shall have a minimum of five years of continued experience in the manufacture of the specified products.
- B. Installer:
 - 1. Minimum five years in the installation of air/weather barriers.
 - 2. Trained or certified by manufacturer for the installation of their products.
- C. Mock-up: Refer to Section 09 2423, Cement Plaster and Metal Lath.
- D. Pre-Installation Conference: CONTRACTOR shall coordinate and conduct pre-installation conference in accordance to Section 01 3119, Project Meetings, to review the progress of construction activities related to the installation of plastic sheet air barrier. In addition to the conference attendees listed on Section 01 3119, plastic sheet air barrier installer and manufacturer technical representative shall attend pre-installation conference.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in undamaged and original packaging.
- B. Store materials in a clean, dry, protected location and within temperature range required by plastic sheet air barrier manufacturer. Protect stored materials from direct sunlight.
- C. Handle materials in accordance with Manufacturer's recommendations.

1.06 WARRANTY

- A. Provide a ten year manufacturer's standard material warranty for replacement of plastic sheet air barriers that fail due to material defects.
- B. Installation Warranty: Provide a two year installation warranty for the plastic sheet air barrier, including accessories, against loss of water-tight seal and loss of attachment.
- C. Warranty shall start on the day of Substantial Completion.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Manufacturer and Products:
 - 1. DuPont (E. I. du Pont de Nemours and Company): Tyvek CommercialWrap.
 - 2. Polymer Group Inc., TyparMetroWrap.
 - 3. Equal.
- B. Properties:
 - 1. Plastic sheet air barrier shall be Type I in accordance to ASTM E1677.
 - 2. Air Permeance: shall not exceed 0.004 cfm/ft², under a pressure differential of 0.3 in w.g. (1.57 psf) (0.02 L/m² at 75 Pa), when tested in accordance with ASTM E2178.
 - 3. Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested in accordance to ASTM E84.

2.02 MISCELLANEOUS MATERIALS

- A. Flashing: Self-adhesive butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

1. DuPont (E. I. du Pont de Nemours and Company); FlexWrap and StraightFlash.
 2. Polymer Group Inc.; Flashing Flex and Flashing AT.
 3. Equal.
- B. Fasteners: Manufacturer approved fasteners.
- C. Tape: Three inch wide seam tape. Pressure-sensitive plastic tape recommended by air barrier manufacturer for sealing joints and penetrations in air barrier.
- D. Sealants and Adhesive Primers: Compatible with plastic sheet air barrier and flashings system and approved by OWNER's Office of Environmental Health and Safety (OEHS).
1. Sealant: Dow Corning 732.
 2. Spray Adhesive: Design Polymerics DP77.
 3. Equal.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates, areas and conditions under which plastic sheet air barrier will be installed.
- B. Verify that substrate to receive air barrier has been completed and inspected before commencement of work.
- C. For the installation of flashing and tape, surface shall be smooth, clean, dry and free from voids, loose substrate, protrusions, or any material that would hinder adhesion.

3.02 INSTALLATION

- A. Install plastic sheet air barrier in accordance to manufacturer's installation guidelines, providing continuity throughout exterior walls. Install plastic sheet air barrier with drainage plane surface pattern in vertical position for proper drainage.
- B. Install plastic sheet air barrier starting from the bottom of the building up to ensure proper overlapping of vertical and horizontal seams. Upper layer of plastic sheet air barrier shall overlap bottom layer by a minimum of six inches. Plastic sheet air barrier shall extend over the weep screed by two inches and be taped down.
- C. Secure plastic sheet air barrier by fastening into studs at 12 to 18 inches on center vertically.

- D. Unroll plastic sheet air barrier directly over windows and doors rough openings. Do not install fasteners within six inches of the sills and jambs of the openings and within nine inches of the header, plastic sheet air barrier shall be fastened at these locations during flashing installation.
- E. Horizontal joints shall be overlapped a minimum of six inches with upper courses overlapping lower courses in water-shedding fashion. Vertical seams shall be overlapped a minimum of six inches. Overlap corners of building a minimum of 12 inches.
- F. Tape vertical and horizontal seams using adhesive tape recommended by manufacturer. Seal tears and cuts with adhesive tape as recommended by manufacturer.
- G. Place patch or strip of self-adhered flashing over plastic sheet air barrier where base plates, metal channels, z-girts, or other hardware will be installed.

3.03 FLASHING

- A. Cut air barrier from door and window openings along jambs and sill. Cut a header flap at 45 degree angle to expose eight inches of plastic sheet air barrier to allow for head flashing installation. Install sill flashing per manufacturer instructions, overlapping up the jambs a minimum of six inches on each side.
- B. Wrap flashing around interior jamb, wall face and exterior jamb, overlapping the vertical portion of the sill flashing by at least two inches.
- C. Adhere flashing to the head following manufacturer's instructions. Flashing shall wrap jamb flashings by a minimum of two inches.
- D. Flash piping, conduit, duct and similar penetrations through walls, and flashing ledgers and sills as recommended by manufacturer.

3.04 FIELD QUALITY CONTROL

- A. Manufacturer's technical representative shall inspect the work and submit a statement indicating that the installation has been done in conformance to manufacturer's installation instructions.

3.05 CLEANING

- A. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

3.06 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 07 5416

POLYVINYL-CHLORIDE ROOFING
(MECHANICALLY ATTACHED)

PART 1 – GENERAL

1.01 SUMMARY

- A. Mechanically-attached Polyvinyl-Chloride (PVC) roofing system with flashings and other components to comprise a mechanically fastened roofing system.
- B. Section Includes:
 - 1. Mechanically fastened PVC roofing over metal decking.
 - 2. Mechanically fastened PVC roofing over wood sheathing.
- C. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 3. Section 06 1000 - Rough Carpentry.
 - 4. Section 07 6000 - Flashing and Sheet Metal.
 - 5. Section 07 7100 - Roof Specialties.
 - 6. Section 07 9200 - Joint Sealants.
 - 7. Division 22 – Plumbing.
 - 8. Division 26 – HVAC.
 - 9. Division 26 - Electrical.

1.02 SYSTEM DESCRIPTION

- A. One layer PVC membrane, one layer of barrier board over one or more layers of rigid insulation board mechanically attached to wood decking.

1.03 SUBMITTALS

- A. Shop Drawings: Submit roof plans and details. Include roof dimensions, drain and scupper locations, gutter locations, and the layout of insulation boards. Provide details indicating components, attachment, and insulation thickness; include a complete set of detail drawings from roofing manufacturer, including one set in a digital format. Provide calculations indicating the average R-value for the system. Indicate drainage patterns and slopes required.
- B. Product Data:
 - 1. List of each component to be used in roof system and Manufacturer's current literature for each component, indicating physical and mechanical properties.
 - 2. Manufacturer's current installation literature.

3. Evidence that proposed products are compatible with PVC.
 4. Material Safety Data Sheets (MSDS).
- C. Evidence that proposed roof system meets requirements of local building code and has been tested and approved or listed by the following test organizations.
1. FM Global, I-90 wind uplift rating.
 2. Underwriters Laboratory, Class A assembly.
- D. Sample copy of Roofing Manufacturer's warranty, including no exclusion for ponding water with a no time limit for any such ponding water.
- E. Sample copy of Installers' warranty.
- F. Letter from Roofing Manufacturer confirming that installer is an authorized applicator of specified roof system.
- G. Samples: Submit Physical samples of membrane components, with the manufactures name and product name clearly identified for each item. Samples shall be no smaller than 6 inches square. Submit samples of fasteners.

1.04 QUALITY ASSURANCE

- A. Unless otherwise specified, roofing shall be installed in accordance with the National Roofing Contractors Association Manual – Latest Edition.
- B. Qualifications of Manufacturer: Roofing materials shall be product of a manufacturer regularly engaged in manufacture of this product for not less than five years.
- C. Qualifications of Installer: Minimum of five years experience in successfully installing the same or similar roofing materials. Work pertaining to the installation of the PVC membrane and flashings shall be completed by Contractor personnel trained and authorized by Roofing Manufacturer in those procedures.
- D. Pre-Installation Conference and Inspection: After review of submittals, but prior to starting installation of the Work of this section, conduct a meeting at the Project site attended by the Architect, Contractor, roofing materials installer, and a technical representative of the roofing material manufacturer. The installer and material manufacturer's technical representative shall inspect the substrates to receive the Work of this section, and report defective conditions to the Architect and Contractor.
- E. Manufacturer's Representative: Provide arrangements necessary to have a trained representative of the manufacturer visit the Project site on a weekly basis during the application of roofing materials to review installation procedures.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to Project site in unopened packages bearing manufacturer's labels.
- B. Store materials above grade and protected from moisture and humidity, in accordance with manufacturer's recommendations.

1.06 JOB CONDITIONS

- A. PVC materials may be installed under certain adverse weather conditions but only after consultation with the Roofing Manufacturer, as installation time and system integrity may be affected.
- B. Only as much new roofing as can be made weather tight each day, including flashing and detail work, shall be installed. Seams shall be cleaned and heat-welded before leaving job site that day.
- C. Work shall be scheduled and executed without exposing building's interior areas to effects of inclement weather. Building and its content shall be protected.
- D. Surfaces to receive insulation, barrier board, membrane or flashings shall be dry. Should surface moisture occur, provide necessary equipment to dry surface prior to installation.
- E. New and temporary construction, including equipment and accessories, shall be secured to prevent damage by wind or other elements.
- F. Uninterrupted waterstops shall be installed at the end of each day's work and shall be completely removed before proceeding with next day's work. Waterstops shall not emit dangerous or unsafe fumes and shall not remain in contact with finished roof as installation progresses. Contaminated membrane shall be replaced at no cost to Owner.
- G. Certain PVC membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preservative materials. Such materials shall not remain in contact with PVC membranes. Contractor shall consult Roofing Manufacturer regarding compatibility, precautions and recommendations.
- H. Do not overload roof deck or building structure.
- I. Rooftop contamination that is anticipated or that is occurring shall be reported to OAR and Project Inspector to determine corrective steps to be taken.
- J. Verify that roof drain lines are functioning correctly (not clogged or blocked) before starting work and after completion. Contractor shall report any such blockages in writing to the Architect for corrective action prior to installation of roof system.
- K. Immediately stop work if any unusual or concealed condition is discovered. Notify the Architect of condition in writing, on appropriate project form, for direction.
- L. Conduct fastener pullout tests in accordance with latest revision of SPRI/ANSI Fastener Pullout Standard to help verify condition of deck/substrate and to confirm expected pullout values.

1.07 WARRANTIES

- A. Roofing Manufacturer's Standard 10 year No Dollar Limit (NDL) Material and Labor Warranty: Warranty shall be issued at Substantial Completion. Warranty shall be Non-Prorated, shall not exclude ponding water and no time limit shall be assigned for any ponding.
- B. Contractor's five year warranty: Contractor's Performance Bond shall cover the first two years of warranty period only.

1. Supply Owner with a separate five year workmanship warranty. In the event any work related to roofing, flashing, or metal is found to be within Contractor warranty's term, defective or otherwise not in accordance with Contract Documents, repair defect at no cost to Owner. Contractor's warranty obligation shall run directly to Owner. Repair shall comply with this specification.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. PVC roofing system shall be as manufactured by one of the following manufacturers:
 1. Sika Sarnafil, Inc.
 2. Johns Manville.
 3. Carlisle.
 4. Equal.

2.02 MEMBRANE

- A. Membrane, Sarnafil S327 FB, thermoplastic membrane with polyester reinforcement and feltback membrane, as the basis of design.
- B. Membrane shall conform to following physical properties:
 1. ASTM D4434 Standard Specification for Polyvinyl Chloride (PVC) Sheet Roofing.
 2. California Energy Code, Section 118 for “Cool Roof Requirements”. Reflective values shall be as follows when tested in accordance to CRRC-1:
 - a. Minimum initial total solar reflectance of 0.70.
 - b. Minimum thermal emittance of 0.75 when tested in accordance with ASTM E408 Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
- B. Membrane shall conform to following physical properties:
 1. Color: White.
 2. Thickness: Minimum of 60 mil (0.060 inch) without fleece backing.
- C. Membrane shall be field fabricated. Blanket type systems will not be accepted.

2.03 FLASHING MATERIALS

- A. Wall/Curb Flashing: PVC Membrane Flashing (Fiberglass): Fiberglass reinforced membrane attached to substrate using approved mechanical attachment.
- B. Perimeter Edge Flashing PVC Clad Metal: PVC-coated, heat-weldable sheet metal capable of being formed into a variety of shapes and profiles. Clad metal shall be 25 gage, G90 galvanized metal sheet with a 20 mil unsupported PVC membrane laminated on one side.

C. Miscellaneous Flashing

1. Reglet/Termination Bar: Reglets shall be heavy-duty, extruded aluminum flashing termination reglet shall be used at walls and large curbs. Reglet shall be produced from 6063-T5, 0.10 inch to 0.12 inch thick extruded aluminum.
2. PVC Prefabricated Pipe Flashing: Prefabricated vent pipe flashing shall be made from 0.050 inch (50 mil) thick PVC membrane.
3. PVC Prefabricated Corners: Prefabricated outside and inside flashing corners shall be made of 0.060 inch (60 mil) thick membrane that is heat-welded to membrane or clad metal base flashings.
4. PVC Cover-strip: Precut flashing shall be made from PVC polyester reinforced membrane. Use to coverstrip attachment bars and attachment discs.

2.04 BARRIER BOARD

- A. DensDeck, or approved equal, minimum ¼ inch thick, siliconized gypsum, fire-tested hardboard with fiberglass-mat facers.
- B. DensDeck, or approved equal, minimum ½ inch thick, siliconized gypsum, fire-tested hardboard with fiberglass-mat facers.

2.05 INSULATION

- A. Rigid isocyanurate foam insulation with black mat facers 4-foot by 8-foot boards, of thickness as required to achieve R-Value indicated.

2.06 ATTACHMENT COMPONENTS

- A. Barrier Board Attachment Plate: Provide heavy duty fasteners to attach insulation/barrier boards to roof deck. Attachment plate shall be 3-inch round, 26 gage stamping of SAE 1010 steel with an AZ 55 Galvalume coating.
- B. Membrane Attachment Plate: High strength plate used with heavy duty fasteners to attach PVC roof membrane directly to roof deck. Plates shall be 20 gage, 2-inch diameter corrosion resistant steel.
- C. Fasteners shall be pre-approved by the Architect and roofing system manufacturer. Avoid galvanic corrosion. Fasteners for attachment of metal to masonry shall be expansion type fasteners with stainless steel pins. Concrete fasteners and anchors shall have a minimum embedment of 1.25 inch and shall be approved for such use by fastener manufacturer. Miscellaneous wood fasteners and anchors used for flashings shall have a minimum embedment of 1 inch and shall be approved for such use by fastener manufacturer.
- D. Solvent-based reactivating-type adhesive used to attach membrane to flashing substrate.
- E. FM Global approved, heavy-duty, 14 gage, galvanized or stainless, roll-formed steel bar used to attach membrane to roof decks. The formed steel is pre-punched with holes every 1 inch on center to allow various Fastener spacing options.

2.07 WALKWAY PROTECTION

- A. PVC Walk Tread: Polyester reinforced, 0.096 inch, weldable membrane with surface embossment.

2.08 MISCELLANEOUS ACCESSORIES

- A. Aluminum Tape: 2-inch wide pressure-sensitive aluminum tape shall be used as a separation layer between small areas of asphalt contamination and membrane and as a bond-breaker under cover-strip at clad metal joints.
- B. Sealing Tape Strip: Compressible foam with pressure-sensitive adhesive on one side. Use with metal flashings as a preventive measure against air and wind blown moisture entry.
- C. Membrane Cleaner: High quality solvent cleaner shall be used for general cleaning of residual asphalt, scuff marks, etcetera, from membrane surface. Membrane cleaner shall be used daily to clean seam areas prior to hot-air welding in tear off or dirty conditions or if membrane is not welded same day it is unrolled.

2.09 SEALANTS

- A. Multi-Purpose Sealant (for termination details): Manufacturer's recommendation.
- B. Depending on substrates, for temporary overnight tie-ins provide one of the following:
 1. Multiple layers of roofing cement and felt conforming to ASTM D4586.
 2. Mechanical attachment with rigid bars and compressed sealant.

PART 3 – EXECUTION

3.01 SUBSTRATE CONDITION

- A. Contractor shall be responsible for acceptance or provision of proper substrate to receive new roofing materials.
 1. Roof curbs, nailers, equipment supports, vents and other roof penetrations shall be properly secured and prepared to receive new roofing materials.
 2. Surfaces shall be smooth and free of dirt, debris and incompatible materials.
 3. Roof surfaces shall be free of water.

3.02 SUBSTRATE PREPARATION

- A. Dry, clean and smooth substrate shall be prepared to receive PVC mechanically-attached roof system. Contractor shall inspect substrate for defects such as excessive surface roughness, contamination, structural inadequacy, or any other condition that will adversely affect quality of work. Substrate shall be free of flaws, sharp edges, loose granules and foreign material, oil and grease. Roofing shall not start until defects have been corrected. PVC membrane shall be applied over compatible and accepted substrates only.
- B. Prior to and during application, dirt, debris and dust shall be removed from surfaces by vacuuming, sweeping, blowing with compressed air or similar methods.

3.03 INSULATION AND BARRIER BOARD INSTALLATION

- A. Insulation and barrier board shall be installed according to manufacturer's instructions.
- B. Insulation and barrier board shall be neatly cut to fit around penetrations and projections.
- C. Do not install more insulation and barrier board than can be covered with PVC membrane by end of day or onset of inclement weather.
- D. When the total insulation thickness exceeds 2 1/2 inches, use at least two layers of insulation. Stagger joints at least 12 inches between layers.
- E. Mechanical Attachment:
 - 1. Barrier board shall be mechanically fastened to deck with approved fasteners and plates at a rate of six per four-foot by eight-foot board. The location of the fasteners and plates shall cause the barrier board to rest evenly on roof deck or substrate so there is no significant and avoidable air spaces between boards and substrate. Each board shall be installed tightly against adjacent boards on all sides.
 - 2. Fasteners shall be installed in accordance with manufacturer's instructions. Fasteners shall have a minimum penetration into structural deck as recommended by manufacturer.

3.04 INSTALLATION OF POLYVINYL CHLORIDE (PVC) MEMBRANE

- A. The surface of substrate shall be inspected prior to installation of PVC roof membrane. The substrate shall be clean, dry, and free from debris and smooth, with no surface roughness or contamination. Broken, delaminated, wet or damaged barrier boards shall be removed and replaced.
- B. General
 - 1. PVC membrane shall be attached with fasteners and discs according to Roofing Manufacturer and FM Global's requirements.
 - 2. Membrane overlaps shall be shingled with flow of water where possible.
 - 3. Tack welding of PVC membrane for purposes of temporary restraint during installation on windy days is not permitted.
 - 4. PVC membrane shall extend over edge of roof and be turned down face a minimum of two inches wherever clad metal edging is to be installed.
- C. Perimeter and Corner Areas
 - 1. Over properly installed and prepared substrate surface, install PVC half-width rolls parallel to perimeter. Number of adjacent half-rolls shall be determined according to FM Global guidelines and Roofing Manufacturer's Technical Specifications. Fasteners and discs shall be installed along edge of membrane on fastening line at a spacing of nine inches on center.
 - 2. Perimeter area is defined as outer boundary of roof. If roof is composed of different levels, each area shall be treated as an individual roof. Internal

expansion joints and firewalls are not full perimeters. Refer to FM Global Data Sheet 1-28 for more information.

3. The ridge area is defined as high point in roof area formed by two intersecting planes. When sum of slopes is a minimum of 4 inches in 12 inches (30 degrees), each side of ridge shall be treated as a perimeter area.
4. Hot-air weld overlaps according to Roofing Manufacturer's requirements. Take test cuts at least 3 times per day.

D. Interior Area

1. Install full-width rolls over properly installed and prepared substrate. Fasteners and discs shall be installed at perimeter at NINE (9) inches on center. Fasteners shall clamp PVC membrane tightly to substrate.
2. Hot-air weld overlaps according to Roofing Manufacturer's recommendations. Take test cuts at least 3 times per day.

E. Secure Perimeter and Rooftop Penetrations

1. Install fasteners and discs around perimeters, at base of walls, drains, curbs, vent pipes, or any other roof penetrations. Fasteners shall be installed at a spacing equal to perimeter, and according to manufacturer's instructions. Fasteners shall be installed using fastener manufacturer's recommended torque-sensitive fastening tools with depth locators. Fasteners shall clamp PVC membrane tightly to substrate.
2. PVC membrane flashings shall extend 2 ½ inches past discs and be hot-air welded to PVC deck membrane.

3.05 WELDING OF SEAMS

A. General

1. Seams shall be hot-air welded. Seam overlaps shall be 3 inches (75 mm) wide when automatic machine welding and 4 inches wide when hand-welding.
2. Welding equipment shall be approved by Roofing Manufacturer. Mechanics intending to use the equipment shall have successfully completed a training course provided by the Roofing Manufacturer's Technical Representative prior to welding.
3. Membrane to be welded shall be clean and dry.

- B. Quality Control of Welded Seams: Contractor shall check welded seams for continuity. On-site evaluation of welded seams shall be made daily by Contractor. One inch wide cross-section samples of welded seams shall be taken three times a day, minimum. Correct welds displaying failure, from shearing of membrane, prior to separation of weld. Each test cut shall be patched by Contractor at no extra cost to Owner.

3.06 MEMBRANE FLASHINGS

- A. Flashings shall be installed concurrently with roof membrane as job progresses. No temporary flashings shall be allowed without prior written approval of the Architect. Approval shall only be for specific locations on specific dates. If water enters under newly completed roofing, affected area shall be removed and replaced at Contractor's expense. Flashing shall be attached to compatible, dry, smooth, and solvent-resistant surfaces.
- B. Install discs according to Drawings submitted by Contractor and approved by the Architect with approved fasteners into structural deck at base of parapets, walls and curbs. Discs may be required by roofing material manufacturer at base of transitions, peaks, and valleys according to roofing manufacturer's details.
- C. Flashings shall extend a minimum of 8 inches above roofing level unless otherwise indicated.
- D. Flashing membranes shall be attached consistently to substrates. Interior and exterior corners and miters shall be cut and hot-air welded into place.
- E. Flashing membranes shall be mechanically fastened along counter-flashed top edge with batten bar at 6 to 8 inches on center.
- F. PVC flashings shall be terminated according to Roofing Manufacturer's recommended details.

3.07 PVC CLAD METAL BASE FLASHINGS/EDGE METAL

- A. Flashings shall be installed concurrently with roof membrane as job progresses. No temporary flashings shall be allowed without prior written approval of OAR and Roofing Manufacturer. Acceptance shall only be for specific locations on specific dates. If any water is allowed to enter under newly completed roofing due to incomplete flashings, affected area shall be removed and replaced at Contractor's expense.
- B. PVC clad metal flashings shall be formed and installed according to detail drawings submitted by Contractor and approved by the Architect.
 - 1. Metal flashings shall be fastened with two rows of post galvanized flat head annular ring nails, 4 inches on center staggered. Fasteners shall penetrate wood nailers a minimum of 1 inch.
 - 2. Metal shall be installed to provide adequate resistance to bending and allow for normal thermal expansion and contraction.
- C. Clad metal shall be installed over field membrane and stripped in with a 6-inch minimum PVC cover strip, prior to installation of the cover.
- D. Adjacent sheets of PVC clad shall be spaced ¼ inch apart. The joint shall be covered with 2 inch wide aluminum tape. A 4-inch minimum wide strip of PVC flashing membrane shall be hot-air welded over joint.
- E. Clad metal shall be installed over field membrane and stripped in with a 6-inch minimum PVC cover strip, prior to installation of the 8-inch cover plate target.

3.08 METAL FLASHINGS

- A. Metal details, fabrication practices and installation methods shall conform to applicable requirements of following:
 - 1. Specification Section 07 6000, Flashing and Sheet Metal.
 - 2. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA) – Latest Edition.
 - 3. National Roofing Contractor’s Association (NRCA) Manual – Latest Edition.
- B. Metal, other than that provided by Roofing Manufacturer, is not covered under Roofing Manufacturer’s warranty, but will be included in Contractor’s warranty.
- C. Complete metal work in conjunction with roofing and flashings so that a watertight condition exists daily.
- D. Metal shall be installed to provide adequate resistance to bending to allow for normal thermal expansion and contraction.
- E. Metal joints shall be watertight.
- F. Metal flashings shall be securely fastened into solid wood blocking. Fasteners shall penetrate wood nailers a minimum of 1 inch.
- G. Airtight and continuous metal cleats are required behind metal fascias. Cleats shall be fastened 12 inches on center into wood nailers or masonry wall.
- H. Counter flashings shall overlap base flashings at least 4 inches.

3.09 WALKWAY INSTALLATION

- A. PVC Walkway Tread: Do not apply walk tread until welded seams in traffic area have been inspected by Project Inspector and deficiencies repaired. Roofing membrane to receive PVC Walkway Tread shall be clean and dry. Clean deck membrane in areas to be welded. Hot-air weld entire perimeter of Walkway to PVC deck sheet. Re-weld any inconsistencies.

3.10 COMPLETION

- A. Single ply roofing shall be washed with running water, mild (environmentally safe) detergent, and clean brooms after completion of minor punch list items, with cleaning being the final item.

3.11 CLEANUP

- A. Remove rubbish, debris, and waste materials on a daily basis and legally dispose of off Project site.

3.12 PROTECTION

- A. Protect new roofing from damage by walking or for equipment movement and storage
- B. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 07 6000
FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sheet metal flashings in connection with roofing.
2. Reglet and counter flashing assemblies.
3. Miscellaneous metal flashing and counter flashing as required, except where provided under Divisions 22, Plumbing, 23, HVAC, or 26, Electrical.
4. Coping caps.
5. Gravel stops and metal edging.
6. Gutters and downspouts.
8. Splash pans where downspouts empty onto roofing.
7. Conductor heads.
8. Drip flashings.
9. Sheet metal covering at outside storage units.
10. Sheet metal wall coverings.
11. Roof pipe flashings.
12. Roof expansion joint covers.
13. Other sheet metal items, not necessarily specified herein or in other sections, but required to prevent penetration of water into building.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 07 2200 - Roof and Deck Insulation.
3. Section 07 7100 - Roof Specialties.
5. Section 07 9200 - Joint Sealants.
6. Section 09 2423 - Cement Plaster and Metal Lath.
7. Division 22 — Plumbing.

8. Division 23 - HVAC.
9. Division 26 - Electrical.

1.02 SUBMITTALS

- A. Shop Drawings: Submit for fabricated sheet metal indicating shapes, details, methods of joining, anchoring and fastening, thicknesses and gages of metals, concealed reinforcement, expansion joint details, sections, and profiles.
- B. Samples: Submit Samples for materials or assemblies as requested.
- C. Product Data: Submit brochures of manufactured items.

1.03 QUALITY ASSURANCE

- A. Drawings and requirements specified govern. Provide the Work of this section in conformance with the Architectural Sheet Metal Manual published by SMACNA for conditions not indicated or specified and for general fabrication of sheet metal items.
- B. Materials shall conform to following standards:
 1. ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
 2. ASTM A653 - Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 3. ASTM B370 - Copper Sheet and Strip for Building Construction.
- C. Pre-installation Meetings: Refer to Division 07 roofing sections as appropriate. Attend the pre-installation and inspection meetings for roofing Work.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Do not install bent or otherwise damaged materials.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Galvanized Sheet Steel: ASTM A653, coating designation G90, hot-dip galvanized.
- B. Copper Plate, Sheet and Strip: ASTM B370, cold-rolled, tempered. Copper sheet and strip shall be cold-rolled-temper.
- C. Stainless Steel: Plate, sheet and strip shall conform to ASTM A167, Type 304 or Type 316, No. 4 finish on exposed surfaces and No. 2 finish on concealed surfaces unless otherwise specified or indicated. Furnish Type 304 for general applications and Type 316 where exposed to acidic or alkaline conditions.

- D. Aluminum Sheet: ASTM B 209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
1. As-Milled Finish: Standard two-side bright.
- E. Fastenings:
1. Galvanized Steel: Nails, rivets, and other fastenings furnished in connection with galvanized sheet steel Work shall be sealed with rust resistive coating. Rivets shall be tinned. Nails and other fastenings shall be zinc-coated.
 2. Copper: Nails, rivets, and other fastenings furnished in connection with copper sheet metal Work, shall be manufactured from hard-temper copper or hard brass.
 3. Stainless Steel: Nails, rivets and other fastenings furnished in connection with stainless steel Work, shall be 300 series alloy to match alloy of stainless steel being fastened.
- F. Soldering Flux: Raw muriatic acid for galvanized steel; rosin for tin, lead and tinned copper; non-corrosive soldering salts for uncoated copper and acid-type flux formulated for soldering stainless steel.
- G. Solder: ASTM B32, Grade 5A, composed of 95-5 tin-antimony. Name of product manufacturer and grade designation shall be labeled, stamped or cast onto each coil or bar.

2.02 FABRICATION

- A. General:
1. Accurately form sheet metal Work to dimensions and shapes indicated and required. Cope finish molded and brake metal shapes with true, straight, sharp lines and angles and, where intersecting each other, to a precise fit. Unless otherwise specified, all galvanized sheet steel shall be 22 gage. Exposed edges of sheet metal shall have a ½ inch minimum hemmed edge.
 2. Soldering of sheet steel or copper shall be performed with well-heated copper soldering iron or soldering torch, joints full flowing, neat and consistent. Fill joint completely with solder. Clean materials at joints before soldering, and tin coppers before soldering. Exposed soldering on finished surfaces shall be scraped smooth. Lock seam work shall be fabricated flat and true to line and soldered along its entire length. Acid-fluxed Work shall be neutralized after fabrication.
 3. Form and install sheet metal Work to provide proper allowances for expansion and contraction, without causing undue stresses in any part of completed Work. Installation shall be water and weathertight.
- B. Gutters and Downspouts:
1. Gutters: Fabricate from 22 gage galvanized steel to match existing size and design unless otherwise indicated. Maximum length of gutter shall be 40 feet between end or expansion joints unless the system is specially designed

to accommodate the greater expansion, the larger flow and the need for special supports. Drain gutter towards nearest downspout and provide an expansion joint at mid-point between downspout outlets, but not to exceed 40 feet on center. Gutters shall not pond water. Rivet joints and ends with a minimum of 6 rivets per joint or maximum rivet spacing not to exceed 1 ½-inch on center and ½ inch from the edge of the metal, consisting of 3-inch overlap. Sweat solder from inside of gutter and in horizontal position where possible. Neatly fit downspouts to gutter using a slip joint. Provide expansion joints, consisting of 3-inch lap joints at not over feet.

2. Form and install sheet metal Work to provide allowance for expansion and contraction without causing undue stresses in the completed Work.
3. Downspouts: Fabricate downspouts from 3-inch round, or 3-inch by 4-inch rectangular shapes, 16 gage steel tubing with butt joints and mitered elbows, sized as indicated. Downspouts shall be constructed with conductor heads every 40 feet to admit air and prevent vacuum. Keep downspouts offsets to a maximum of 10 feet. Downspout shall be fabricated with elbows at bottom discharge or connected to drains as indicated. Joints, except expansion joints shall be sealed with a continuous weld. Galvanize downspouts after fabrication.
4. Outlets: Fabricate outlets of 22 gage galvanized sheet steel with a 1/4 inch rolled flanged soldered continuously to gutter. Outside diameter shall be 1/8 inch less than the inside diameter of the downspout and extend into downspout 4 inches. Install a removable wire “bulb type” strainer to outlet opening. Strainer shall be fabricated of 22 gage galvanized steel and ½ inch hardware cloth.

C. Conductor Heads:

1. Fabricate conductor heads and outlets from 22 gage galvanized sheet steel. Cover tops of the conductor heads with 22 gage galvanized ¼ inch wire mesh soldered securely to separately fabricated frame and mechanically fastened to top conductor head with a minimum of two fasteners.

D. Gravel Stops: Provide 24 gage galvanized sheet steel gravel stops wherever roof area drops to a lower level; at the eaves and rake of roof, where roof comes to an abrupt edge, and where indicated. Stops shall be of height indicated and shall be fabricated with two flanges. Horizontal flange shall be not less than 4 inches wide, and vertical flange shall extend down over vertical surfaces of trim or gutter. Gravel stops shall lap 4 inches at ends and corners, and shall be fabricated by notching and interlocking vertical face flanges. Contact surfaces of lapped flanges, including raised areas, vertical face and corners, shall be completely covered with flashing compound. Fabricate lap joints so that they will be in the direction of water flow. Where flanges are over five inches wide, provide 20 gage continuous cleats fastened at 24 inches on center.

E. Overflow Outlets: Provide galvanized sheet steel overflow outlets at locations and of sizes indicated. Outlets shall extend through full thickness of wall in one continuous piece and completely line the opening. On outside face of wall, top and sides of outlet shall finish 1/2 inch on surface of wall. Bottom of outlet shall project

1 ½ inches beyond face of wall, and shall be bent down slightly. Outlets shall be sealed on the surface of the building. On inside face, side and bottom flanges shall extend not less than 8 inches beyond edge of opening, and not less than 6 inches at top. Outlets shall be installed at time roof is being installed.

- F. Reglet Type Counterflashing: Where roof comes in contact with vertical surfaces, provide counterflashing. Set top of counter flashing 8 inches above roof deck unless otherwise indicated, and extend down at least 5 inches or to top of cant strip. Counterflashing and reglet shall be 22 gage galvanized sheet steel. Lap counter flashing and reglet 3 inches minimum at splices and miter at angles, or supply special metal corner fittings. Reglet and method of securing flashing shall be so constructed that flashing is firmly locked in place, but may be readily removed for replacement.
- G. Splash Pans: Provide splash pans for all downspouts, which empty onto lower roofs. Pans shall be galvanized sheet steel 12-inch by 18-inch, unless otherwise indicated, and turned up 2 inches on at least three sides.
- H. Roof Expansion Joint Covers: Fabricate of 22 gage galvanized sheet steel, as detailed. One side of joint shall be zee shaped, with 3-inch standing leg extended over the joint and turned down. The other side shall be box shaped, fabricated to extend over the joint, over the standing leg, and turn down to form a water barrier. Prefabricated bellows type joint covers are not permitted.
- I. Miscellaneous Flashing: Unless otherwise indicated, miscellaneous flashing shall be fabricated of galvanized steel. Exterior doors and windows, unless covered by overhangs shall be provided with 22 gage galvanized steel drip flashing as detailed. At wood construction, nail flashing to framing before paper backed lath is installed.
- J. Roof Pipe Flashings: Provide PVC flashings or prefabricated welded or seamless flashings.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Concrete and masonry materials in contact with sheet metal shall be painted with alkali resistant coating, such as heavy-bodied bituminous paint. Wood in contact with sheet metal shall be painted with two coats of aluminum paint or one coat of heavy-bodied bituminous paint.

3.02 INSTALLATION

- A. General: Coordinate with installation of underlayment indicated in the Drawings and specified in Section 09 2423.
- B. Gutters and Downspouts:
 - 1. Anchor gutters to structure with 10 gage steel straps, galvanized after fabricating. Secure straps with galvanized fasteners at 3 feet on center. Drill pilot holes and use 12 by 2-inch pan head screws.
 - 2. Install 1/4 inch galvanized wire mesh continuous cover on gutter.

3. Secure downspouts to walls with 1/8 inch by 2-inch galvanized steel straps. Straps shall be located at top, bottom, and at not over 10 feet on center. Block downspouts out 1/2 inch from the finish wall surfaces and 1 inch from the bottom of downspout grade. Secure straps to wall framing with 1/4 inch by 2-inch long galvanized anchors. Expansion type anchors shall be provided when anchoring to concrete and masonry. Provide toggle bolts for attachment to masonry or plaster. At steel columns, provide fasteners as indicated. Plastic anchors are not permitted.
 4. Anchor conductor heads to walls with 1/4 inch diameter by 2 1/2-inch long galvanized lag screws or 1/4 inch expansion type anchors.
- C. Reglets: Install reglets at constant height above cant or as indicated. Provide minimum 3-inch lap at end splices of reglets. Seal laps watertight.
- D. Counterflashing:
1. Install at constant horizontal elevation across roof slope and slope at constant height above cant or as indicated.
 2. Provide minimum 3-inch lap at all end splices of counterflashing.
- E. Galvanized sheet steel parapet coping and flashing shall be continuous over top of parapet to form a watertight cap, with waterproof seams at approximately 10 feet on center, or as indicated. Anchor coping to outside of wall with a continuous cleat face nailed at 24 inch centers. Coping shall be fastened on inside wall with hex head screws and bonded sealing washers through oversized holes in the back of the coping. Corners and angles shall be lapped and soldered; do not install joint sealant.

3.03 TESTING

- A. Perform field water testing to demonstrate installation is watertight. Continue testing with a continuous hose stream applied at base of installation for at least 30 minutes. If leaking is observed, discontinue test and repair installation, then test until satisfactory results are obtained.

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.05 CLEANING

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 07 7100

ROOF SPECIALTIES AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Roof hatches.
2. Smoke Hatches.
3. Gravity ventilators.

B. Related Requirements:

1. Division 01 - General Requirements.
4. Section 05 5000 – Metal Fabrications.
5. Section 06 1000 - Rough Carpentry.
6. Section 07 6000 - Flashing and Sheet Metal.

1.02 SUBMITTALS

- A. Shop Drawings: Submit for fabricated sheet metal indicating details, methods of joining, anchoring and fastening, thicknesses and gauges of metals, concealed reinforcement, sections, and profiles.
- B. Samples: Submit Samples for materials or assemblies as requested. Provide finish Samples of exposed items.
- C. Product Data: Submit brochures of manufactured items.
- D. Installation Instructions: Provide manufacturer's recommended installation methods and instructions for each item. Instructions shall be prepared to indicate exact conditions of roofing, structure and adjoining construction.

1.03 QUALITY ASSURANCE

- A. Drawings and requirements specified govern. Provide the Work in accordance with the Architectural Sheet Metal Manual published by SMACNA for conditions not indicated or specified and for general fabrication of sheet metal items.
- B. Qualifications of Installer: Minimum 5 years experience in successfully installing the same or similar sheet metal specialties on roofing systems similar to the roofing systems specified.

- C. Coordinate opening sizes and installation with roofing and related Work to ensure fit and installation.
- D. Pre-installation Meetings: Refer to Division 07 roofing sections as appropriate. Attend the pre-installation and inspection meetings for roofing Work.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Protect roof specialties and accessories by storing above grade on required skids or supports. Protect from physical damage and do not install bent or damaged materials.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Roof Hatches:
 - 1. Babcock Davis.
 - 2. Bilco Company.
 - 3. Lane-aire Model CRH.
 - 4. Dur-Red Products.
 - 5. Equal.
- B. Ventilators: Loren Cook Company, Greenheck, Grainger, or equal.
- C. Smoke Hatches:
 - 1. Babcock Davis.
 - 2. Bilco Company.
 - 3. Dur-Red Products.
 - 4. Equal.

2.02 PRODUCTS

- A. Roof Hatches: Provide roof hatches of indicated sizes. Hatches shall be fabricated of galvanized steel, 14 gage curb and cover, 22 gage cover liner, and 1 inch thick insulation in cover and curb. Cover shall operate by a compression spring enclosed in a telescopic case or enclosed torsion spring, with automatic hold-open arm. Provide padlock hasp on inside of unit.

1. Accessories: Provide manufacturers fixed hatch railing system, providing a permanent means of fall protection for roof hatch openings. Rail system shall meet OSHA Standard 29 CFR 1910.23(a)(3).
 2. Refer to Section 05 5000, Metal Fabrications, for ladder extensions.
- B. Gravity Ventilators: Provide ventilators at locations and of sizes and type indicated on plans. Ventilators shall be securely fastened to roof curbs as indicated in manufacturer's details. Ventilators shall have ½-inch mesh galvanized steel mesh bird screen.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrate to receive roofing accessories and associated Work and conditions under which accessories will be installed. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Install roof accessories in accordance with SMACNA and manufacturer's recommendations as required.

3.03 FIELD QUALITY CONTROL

- A. Perform field water testing to demonstrate that installation is watertight. Continue testing with a continuous hose stream applied at base of installation for at least 30 minutes. If leaking is observed, discontinue test and repair installation, then test until satisfactory results are obtained.

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.05 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 07 9200
JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Joint sealants.
 - 2. Preparation for application of sealants.
- B. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 2. Section 06 2000 - Finish Carpentry.
 - 3. Section 07 6000 - Flashing and Sheet Metal.
 - 4. Division 08 - Openings.
 - 5. Division 09 - Finishes.
 - 6. Section 10 2813 - Toilet Accessories.

1.02 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings indicating sealant joint locations, with full-size sealant joint details.
- B. Product Data: Submit manufacturer's literature for each sealant material.
- C. Material Samples: Submit Samples indicating color range available for each sealant material intended for installation in exposed locations.
- D. Certifications: Submit manufacturer's certification materials comply with requirements specified.
- E. Site Samples: At locations required, provide a Sample of sealant for each typical installation, approximately 24 inches long, including joint preparation, backing, sealant and tooling. Allow backing to extend 6 inches beyond end of sealant for inspection of substrate.
- F. Test Reports: Submit manufacturer's adhesion compatibility test reports according to ASTM C794 for each substrate.

1.03 QUALITY ASSURANCE

- A. Qualifications of Installer: The Work of this section shall be installed by a firm which has been in the business of installing similar materials for at least five consecutive years; and can show evidence of satisfactory completion of five projects of similar size and scope. Installer shall have applicators trained and approved by manufacturer for performing this Work.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Store in accordance with manufacturer's recommendations. Provide a uniform ambient temperature between 60 and 80 degrees F.

1.05 WARRANTY

- A. Manufacturer: five year material warranty.
- B. Installer: two year installation/application warranty.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Furnish sealants meeting following in-service requirements:
 - 1. Normal curing schedules are permitted.
 - 2. Non-staining, color fastness (resistance to color change), and durability when subjected to intense actinic (ultraviolet) radiation are required.
- B. Furnish the products of only one manufacturer unless otherwise required, sealant colors as selected to match the adjoining surfaces.

2.03 MATERIALS

- A. Sealants:
 - 1. Sealant 1: Acrylic latex, one-part, non-sag, mildew resistant acrylic emulsion compound complying with ASTM C834, Type S, Grade NS, formulated to be paintable.
 - a. Tremco Inc., Acrylic Latex Caulk.
 - b. Pecora Corporation, AC-20.
 - c. Equal.
 - 2. Sealant 2: Butyl sealant, one-part, non-sag, solvent-release-curing sealant complying with ASTM C1311, gun grade and formulated with a minimum of 75 percent solids.

- a. Tremco Inc., Tremco Butyl Sealant.
 - b. Pecora Corp., BC-158.
 - c. Equal.
3. Sealant 3: Silicone sealant, one-part non-acid-curing silicone sealant complying with ASTM C920, Type S, Grade NS, Class 25.
- a. Dow Corning Corp., Dow Corning 790, 791, 795.
 - b. General Electric Co., Silpruf.
 - c. Tremco, Inc., Spectrem 1.
 - d. Pecora Corp., 864.
 - e. Equal.
4. Sealant 4: One-part mildew-resistant silicone sealant, complying with ASTM C920, Type S, Grade NS, Class 25.
- a. Dow Corning Corp., Dow Corning 786.
 - b. General Electric Co., Sanitary 1700.
 - c. Tremco, Inc., Proglaze White.
 - d. Equal.
5. Sealant 5: One-part non-sag urethane sealant, complying with ASTM C920, Type S, Grade NS, Class 25.
- a. Sika Corporation, Sikaflex -221e.
 - b. Equal.
6. Sealant 6: Multi-part pouring urethane sealant, complying with ASTM C920, Type M, Grade P, Class 25.
- a. Sika Corporation, Sikaflex 2C NS/SL.
 - b. Equal.
7. Sealant 7: Acoustical sealant, non-drying, non-hardening permanently flexible conforming to ASTM D217.
- a. Pecora Corp., BA-98 Acoustical Sealant.
 - b. Equal.

- C. Joint Backing: ASTM D1056; round, closed cell Polyethylene Foam Rod; oversized 30 to 50 percent larger than joint width, reticulated polyolefin foam.
- D. Primer: Non-Staining Type. Provide primer as required and shall be product of manufacturer of installed sealant.
- E. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer.
- F. Sealants shall have normal curing schedules, shall be nonstaining, color fast and shall resist deterioration due to ultraviolet radiation.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that joint openings are ready to receive Work and field tolerances are within the guidelines recommended by sealant manufacturer.

3.02 SURFACE PREPARATION

- A. Joints and spaces to be sealed shall be completely cleaned of all dirt, dust, mortar, oil, and other foreign materials which might adversely affect sealing Work. Where necessary, degrease with a solvent or commercial degreasing agent. Surfaces shall be thoroughly dry before application of sealants.
- B. If recommended by manufacturer, remove paint and other protective coatings from surfaces to be sealed before priming and installation of sealants.
- C. Preparation of surfaces to receive sealant shall conform to the sealant manufacturer's specifications. Provide air pressure or other methods to achieve required results. Provide masking tape to keep sealants off surfaces that will be exposed in finished Work.
- D. Etch concrete or masonry surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5 percent solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.
- E. Perform preparation in accordance with ASTM C804 for solvent release sealants, and ASTM C962 for elastomeric sealants.
- F. Protect elements surrounding Work of this section from damage or disfiguration.

3.03 SEALANT APPLICATION SCHEDULE

	<u>Location</u>	<u>Type</u>	<u>Color</u>
A.	Exterior and Interior joints in horizontal surfaces of concrete; between metal and concrete	Sealant 6	To match adjacent material

masonry and mortar.

- | | | | |
|----|--|----------------|----------------------------|
| B. | Exterior door, entrance and window frames. Exterior and interior vertical joints in concrete and masonry metal flashing. | Sealant 3 or 5 | To match adjacent material |
| C. | Joints within glazed curtain wall system. Skylight framing system. Aluminum entrance system glass and glazing. | Sealant 3 | Translucent or Black |
| D. | Interior joints in ceramic tile and at plumbing fixtures. | Sealant 4 | Translucent or White |
| E. | Under thresholds. | Sealant 2 | Black |
| F. | All interior joints not otherwise scheduled | Sealant 1 | To Match Adjacent Surfaces |
| G. | Heads and sills, perimeters of frames and other openings in insulated partitions | Sealant 7 | Match Adjacent Surfaces |

3.04 APPLICATION

- A. Provide sealant around all openings in exterior walls, and any other locations indicated or required for structure weatherproofing and/or waterproofing.
- B. Sealants shall be installed by experienced mechanics using specified materials and proper tools. Preparatory Work (cleaning, etc.) and installation of sealant shall be as specified and in accordance with manufacturer's printed instructions and recommendations.
- C. Concrete, masonry, and other porous surfaces, and any other surfaces if recommended by manufacturer, shall be primed before installing sealants. Primer shall be installed with a brush that will reach all parts of joints to be filled with sealant.
- D. Sealants shall be stored and installed at temperatures as recommended by manufacturer. Sealants shall not be installed when they become too jelled to be discharged in a continuous flow from gun. Modification of sealants by addition of liquids, solvents, or powders is not permitted.

- E. Sealants shall be installed with guns furnished with proper size nozzles. Sufficient pressure shall be furnished to fill all voids and joints solid. In sealing around openings, include entire perimeter of each opening, unless indicated or specified otherwise. Where gun installation is impracticable, suitable hand tools shall be provided.
- F. Sealed joints shall be neatly pointed on flush surfaces with beading tool, and internal corners with a special tool. Excess material shall be cleanly removed. Sealant, where exposed, shall be free of wrinkles and uniformly smooth. Sealing shall be complete before final coats of paint are installed.
- G. Comply with sealant manufacturer's printed instructions except where more stringent requirements are indicated on Drawings or specified.
- H. Partially fill joints with joint backing material, furnishing only compatible materials, until joint depth does not exceed 1/2 inch joint width. Minimum joint width for metal to metal joints shall be 1/4 inch. Joint depth, shall be not less than 1/4 inch and not greater than 1/2 inch.
- I. Install sealant under sufficient pressure to completely fill voids. Finish exposed joints smooth, flush with surfaces or recessed as indicated. Install non-tracking sealant to concrete expansion joints subject to foot or vehicular traffic.
- J. Where joint depth prevents installation of standard bond breaker backing rod, furnish non-adhering tape covering to prevent bonding of sealant to back of joint. Under no circumstances shall sealant depth exceed 1/2 inch maximum, unless specifically indicated on Drawings.
- K. Prime porous surfaces after cleaning. Pack joints deeper than 3/4 inch with joint backing to within 3/4 inch of surface. Completely fill joints and spaces with gun applied compound, forming a neat, smooth bead.

3.05 MISCELLANEOUS WORK

- A. Sealing shall be provided wherever required to prevent light leakage as well as moisture leakage. Refer to Drawings for condition and related parts of Work.
- B. Install sealants to depths as indicated or, if not indicated, as recommended by sealant manufacturer but within following general limitations:
 1. For joints in concrete walks, slab and paving subject to traffic, fill joints to a depth equal to 75 percent of joint width, but not more than 3/4 inch deep or less than 3/8 inch deep, depending on joint width.
 2. For building joints, fill joints to a depth equal to 50 percent of joint width, but not more than 1/2 inch deep or less than 1/4 inch deep.

3.06 CLEANING

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.07 CURING

- A. Sealants shall cure in accordance with manufacturer's printed recommendations. Do not disturb seal until completely cured.

3.08 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 08 1113

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Hollow metal doors and frames or hollow metal doors as indicated.
2. Hollow metal window frames or hollow metal door and window frames.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 07 9200 - Joint Sealants.
3. Section 08 7100 - Door Hardware.
4. Section 09 9000 - Painting and Coating.

1.02 DESIGN REQUIREMENTS

- ###### A.
- Door-and-frame assemblies or frames shall include reinforcing and provisions for hardware as shown and specified. Drawings indicate profile and general details of steel frame fabrication and installation.

1.03 SUBMITTALS

- ###### A.
- Shop Drawings: Submit composite Shop Drawings indicating detailed relationships of installation including Work of adjacent construction, finish hardware, security, fire and life safety devices, glazing, sealing, and requirements for field installation. Include elevations of each hollow metal door type, details of each frame type, location schedule of doors and frames indicating same reference for details and openings as indicated on Drawings, conditions of openings of various wall sections and materials, typical and special details of construction, methods of assembling sections, location and installation requirements for hardware, material size, shape, and thickness, and joints and connections.
- ###### B.
- Product Data: Submit manufacturer's Product Data indicating composition and construction for each fabricated item including louvers, coatings, finishes, and other components demonstrating compliance with referenced standards.

- C. Certification: Submit certification of compliance with referenced standards and specified criteria, including but not limited to fire ratings in accordance with UL 10C, Physical Endurance in accordance with ANSI A250.4 and Prime Paint performance in accordance with ANSI A250.10.
- D. Samples:
 - 1. Hollow Metal Frame: Corner section of typical exterior and interior frame, of sufficient composite size to illustrate corner joint construction, hinge reinforcement, closer re-enforcement, floor anchor, dust cover, and jamb anchors, and showing galvanizing and prime coat finishes.
 - 2. Hollow Metal Door: Section of typical interior door of sufficient composite size to illustrate edge, top, bottom, and core construction, hinge reinforcement and face stiffening, closer reinforcement and kick plate reinforcement, and corner of vision opening construction with glazing beads.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum documented experience of more than five years in work of this section.
- B. Installer Qualifications: Minimum documented experience of more than five years in work of this section
- C. Coordinate with hardware supplier for fabrication of doors and frames to receive hardware items.
- D. Coordinate with intrusion alarm supplier for fabrication of doors and frames to receive intrusion detection devices.
- E. References: Work shall comply with physical and performance requirements of following standards, including standards referenced in them, except for more stringent provisions specified herein or required by regulatory agencies:
 - 1. ANSI/SDI A250.8, SDI 100 Recommended Specifications for Standard Steel Doors and Fames.
 - 2. ANSI/NFPA 252, Fire Tests of Door Assemblies.
 - 3. ANSI/UL 10B, Fire Tests of Door Assemblies.
 - 4. ANSI/UL 10C, Positive-Pressure Fire Tests of Door Assemblies.
 - 5. ANSI/NFPA 80, Fire Doors and Fire Windows

6. HMMA, Guide Specifications for Commercial Hollow Metal Doors & Frames (Standard of National Association of Architectural Metal Manufacturers).
7. ANSI/SDI A250.4, Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
8. ANSI A250.10, Test Procedure and Acceptance Criteria for Prime Painted Steel Doors and Frames.
9. ANSI A250.6, Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.

F. Standards of Fabrication and Installation:

1. Finished Work shall be of uniform profile, accurately fabricated, rigid and strong, square and true, neat in appearance, smooth and free from dents, waves, warps, buckles, open joints, tool marks and/or other defects.
2. Steel sheet shall be clean with smooth surfaces free of scale, pitting or other defects.
3. Construction joints shall be flush, tight and welded their full length, ground flush and smooth on exposed surfaces.
4. Frame and door reinforcing and hardware provisions shall be performed in fabrication shop. Provide cuts, welds, and other fabrications before galvanizing or shop priming.
5. Lines and molded members shall be straight and true with angles as sharp as practical for thickness involved, surfaces flat, and fastenings concealed.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Frames: Before shipment, install temporary spreaders at bottom of bucks and do not remove until frames are installed.
- B. Doors: Provide protection as required to protect doors during shipping and storage. Damaged doors will be rejected.
- C. Inspect hollow metal Work upon delivery for damage. Remove and replace damaged items with new Work as required.
- D. Store doors and frames in an upright position at Project Site under cover and protected from weather-related elements. Store units on minimum 4-inch high wood blocking with ½ inch air spaces between stacked doors to provide circulation.

Do not store doors and frames under plastic or canvas shelters that can create a humidity chamber. If shipping packaging becomes wet, immediately remove packaging.

1.06 WARRANTY

- A. Manufacturer shall provide a five year material warranty.
- B. Installer shall provide a two year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Doors and frames shall be products of a single manufacturer.
- B. The following are acceptable manufacturers, as are others that can demonstrate their products are equivalent in quality, performance and compliance with these specifications.
 - 1. Security Metal Products Corp.
 - 2. Curries Manufacturing, Inc.
 - 3. Steelcraft.
 - 4. Amweld Metal Doors and Frames.
 - 5. Stiles Custom Metal, Inc.
 - 6. Door Components Inc.
 - 7. CECO Door.
 - 8. Equal.
- C. Materials, fabrication and installation must comply with requirements of standards referenced in Section 1.04, Quality Assurance.

2.02 MATERIALS

- A. Steel:
 - 1. Interior Doors and Frames: Cold-Rolled Steel Sheets, Commercial Quality Carbon Steel, ASTM A1008.

2. Steel shall be free of scale, pitting, coil breaks or other surface blemishes, and free of buckles, waves or other defects.
 3. Steel thicknesses expressed in steel gages (MSG) is for reference only. Actual steel thicknesses must meet minimum requirements of ASTM standards and as described in ANSI/SDI A250.8.
- A. Supports and Anchors: Fabricate from a minimum 16 gauge galvanized sheet steel unless noted otherwise.
- B. Fasteners: Provide as shown on Drawings and to suit conditions of secure installations. Furnish 304 Grade stainless steel types at exterior doors.
- C. Door Louvers:
1. Louver free air flow shall be 50% free area.
 2. Louvers for exterior doors shall be galvanized and furnished with not less than 12 gage frame and security grille welded to 18 gage steel blades, fully galvanized, with removable galvanized or bronze insect screen on inside. Install louver with tamperproof-head through-bolts. Anemostat PLSL, Air Louvers Inc. Model 1500-A, L & L Louvers, or equal.
 3. Fusible link louvers: Listed by State Fire Marshal, UL labeled and installed with tamperproof fasteners.
 4. Louvers shall be comply with SDI 111C and be furnished with factory primer.
- D. Vision panels: Manufacturer's standard, U.L. approved, finished flush with door face, with no visible fasteners on either door face.
- E. Shop Paint:
1. Conform to Steel Structures Painting Council (SSPC) for steel components.
 2. Pretreatment/priming coatings shall be compatible with Project site finish painting system in accordance with Section 09 9000.
 3. At frames to be grouted, surfaces that are inaccessible after installation shall be coated with bituminous or asphaltic base paint.

2.03 FABRICATION GENERAL

- A. General: Fabricate hollow metal units to be rigid, neat in appearance, and free from defects including warp or buckle.

1. Accurately form metal to required sizes and profiles. Fit and assemble units in manufacturer's plant. Where practical, factory or shop fit and assemble units for shipment.
2. Weld joints continuously; grind, dress, and make smooth, flush, and invisible. Filler to conceal manufacturing defects or damage is not permitted.
3. Corner Joints: Finish corner joints by mitering, or coping and butting, or a combination of both. Trim and backbend shall be continuous around corner.
4. Continuously weld joints for full depth and width of frame, trim, and backbends.
5. Clearances for Fire-Rated Doors: As required by NFPA 80.

2.04 FRAMES

- A. General: Provide fully welded steel frames with integral stops and trim for doors, transoms, sidelights, borrowed lights, and other openings, and with details indicated for type and profile. Use concealed fastenings, unless otherwise indicated.
- B. Metal Thickness of Frames (minimum):
 1. Interior hollow metal frames up to 4-foot wide 16 gage
 2. Interior hollow metal frames wider than 4-foot 14 gage
 3. Borrowed lights up to 4-foot wide 16 gage
- C. Supports and Anchors: Fabricate from at least 16-gage, galvanized steel sheet. Frame anchors shall comply with fire rated label requirements of opening.
 1. Floor Anchors:
 - a. Minimum thickness: 12 gage galvanized steel sheet or bent steel plate, securely fastened inside each jamb, with two holes in anchor at each jamb for 3/8 inch floor anchorage fasteners. For preframed wood stud walls provide and additional wood stud anchor located as close to the bottom of the jamb as is practical.
 - b. Where required at sloping and uneven floor conditions, or to coordinate adjustments for trim alignments, provide adjustable floor anchors, providing at least 2-inch height adjustments.
 2. Jamb Anchors:

- a. Locate anchors near top and bottom and at intermediate points not to exceed 24 inches on center. Provide two anchors per head for openings up to 48 inches wide; over 48 inches wide provide anchors at 24 inches on center maximum.
 - b. Anchors in masonry construction: Provide manufacturers standard jamb anchors. Steel wire complying with ASTM A510, 0.177 inch in diameter, may be furnished.
 - c. Anchors in Stud Partitions: Provide steel anchors, 16 gage minimum sheet steel, of design to suit partition construction, securely welded inside each jamb.
 - d. Through-Frame Anchors: At frames indicated to be anchored with bolts through frame, provide countersunk holes for bolts with 16 gage minimum sheet steel stiffeners full thickness of frame, and securely welded inside each frame at each hole.
- D. Inserts, Bolts, and Fasteners: Provide manufacturer's standard units. Where zinc-coated items are to be built into exterior walls, comply with ASTM A153 Class C or D as required.
- E. Head Reinforcing: Refer to Detail #2 of this section. Reinforcing shall not act as lintel or load-carrying member and shall comply with fire rating requirements. Provide at frames regardless of whether a closer is called for.
- F. Hardware Reinforcement and Accessories:
- 1. Butt Hinge: 7 gage minimum.
 - 2. Head assemblies: Reinforced internally with, full length, 10 gage angles on each side of frame and bar at bottom of stop for closer reinforcement in frames as shown in Detail #2 of this section.
 - 3. Reinforcing for other items of finish hardware shall be accomplished according to ANSI A250.6.
 - 4. Plaster Guards: Provide 26 gage galvanized steel plaster guards or dust cover boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.
- G. Mullion and Transom bars: Furnished and fabricated as specified for frames.
- H. Door Silencers: Except for exterior doors, drill and punch frames for three silencers at lock jamb of single swing doors or in double doors with astragal and one silencer per leaf in heads of doubled door frames.

- I. Where frames are installed in walls sitting on a concrete curb, provide a closure plate or extend backbends to provide closure where frame abuts concrete curb.

2.05 DOORS

- A. General: Custom-made, flush-panel “seamless type” with one-piece face panels; continuous weld, seamless edge construction with no visible seams or joints on faces or on vertical edges.
 - 1. Provide type and size of doors shown with louvers and openings for glazing where indicated.
 - 2. Door thickness: 1 ¾ inches.
 - 3. Face Sheet Minimum Gage: 16 gage.
 - 4. Stiffeners: Stiffen door face sheets with continuous vertical-formed steel (rib) sections or back to back hat sections, minimum 20 gage, full thickness of interior space between door faces, spaced 6” on center maximum, and spot welded to both faces 4” on center maximum.
 - 5. Acoustical Insulation: Provide sound deadening and insulating material through entire core of door (full height, width, and thickness of door). Doors shall have a minimum STC of 28 as tested under ASTM E90 and ASTM E413, unless noted otherwise..
 - 6. Thermal Insulation: Exterior doors shall be insulated to R values scheduled or indicated on drawings.
 - 7. Labeled Doors: Where fire-rated openings and conditions are indicated.
 - a. Labeled doors shall be provided with fire-resistance rating indicated and shall be constructed as tested and approved by Underwriters’ Laboratories (UL) for installation in labeled frame and door assemblies.
 - b. Gaskets: Gaskets are supplied under Section 08 7100 - Door Hardware. Gaskets and installation shall conform to requirements of NFPA 105, “Installation of Smoke and Draft Control Door Assemblies.”
 - c. Fabricate labeled doors with same finished appearance as specified for non-labeled hollow metal doors; with welded door edges, filled and ground smooth; with label affixed to door.
 - d. Where fire labels are required and continuous hinge is specified, install label on top of door within 6” of hinge side of door.

8. Door Edges: Join door face sheets at vertical edges of door with continuous weld full height of door. Grind, fill, and dress welds smooth to provide invisible seam with smooth, flush surface.
 - a. Close ends of doors with continuous recessed channels, 16 gage steel minimum, spot welded to both face sheets. Close top and bottom edges of doors with a internal steel channel, screw attached into top and bottom of door. Channel shall be galvanized at exterior doors. No screws are allowed on visible faces of door. Provide openings in bottom closure of exterior doors to permit escape of entrapped moisture.
 - b. Profile of Door Edges:
 - 1) Single-acting swing doors: Bevel both vertical edges 1/8" in 2".
 - 2) Pairs of single-acting swing doors: Bevel hinge edge 1/8" in 2". Provide surface mounted astragals for labeled or unlabeled doors unless otherwise shown on Drawings or required.
 - 3) Double-acting swing doors: Round both vertical edges on 2" minimum radius.
9. Door Louvers: Install according to manufacturers recommendations.
10. Glass Stops:
 - a. Furnish fixed stops integral with and welded at security side of door.
 - b. Finish: Factory primer.

B. Hardware Reinforcement and Accessories:

1. Provide sheet steel or plate reinforcement for finish hardware items wherever necessary. Mortise, drill and tap to template requirements for mortise type hardware.
2. Butt reinforcing: 7 gage minimum, of length 4" longer than length of butt. Minimum 3 spot welds at top and bottom.
3. Door closer reinforcement: 14 gage minimum steel channel, 6" high on each side of door. Reinforcement to extend full width of door in accordance with Detail #1 of this section.

4. Kick plate reinforcement: 14 gage minimum steel plate, 10” high on each side of door. Reinforcement to extend full width of door in accordance with Detail #1 of this section.
5. Other Hardware Requirements: Cut, reinforce, drill, and tap doors and frames for other hardware, including energy management switches or contacts and security devices, in accordance with furnished hardware templates for accessory items. Thickness and size of reinforcement shall be as required by ANSI A250.6.

2.06 SHOP PRIMING

- A. Exposed and concealed metal surfaces of hollow metal doors, frames and other hollow metal Work of this Section shall be bonderized and then shop primed.
- B. Exposed surfaces of doors, frames and accessories shall be filled, sanded smooth and cleaned before painting.
- C. Exposed surfaces shall be shop primed after assembly.

PART 3 - EXECUTION

3.01 FRAME INSTALLATION

- A. Install steel frames accurately in location, perfect alignment, plumb, straight and true. Brace frames to prevent displacement.
- B. Anchor frames in concrete and concrete unit masonry with galvanized anchor bolts; 3/8 inch diameter, counter-sunk at 24 inches on center at head and jamb unless noted otherwise.
- C. Anchor frames in steel and wood frame partitions with manufacturer recommended anchors.
- D. Install frame at fire rated openings in accordance with NFPA Standard No. 80.
- E. Furnish filler for anchor attachment screws, and sand smooth.

3.02 DOOR INSTALLATION

- A. Install steel doors in accordance with manufacturer's instructions and as indicated on Drawings and in Finish Hardware Specifications. Coordinate with Work of other trades.
- B. Adjust operable parts for correct function.

- C. Remove hardware, except primer-coated items, tag, box and install after finish painting has been completed.

3.03 PRIME COAT TOUCH-UP

- A. Immediately after installation, remove rust, repair damaged surfaces to new condition, sand smooth, and install touch-up primer.

3.04 CLEAN UP

- A. Remove rubbish, debris and waste materials and legally dispose of off Project site.

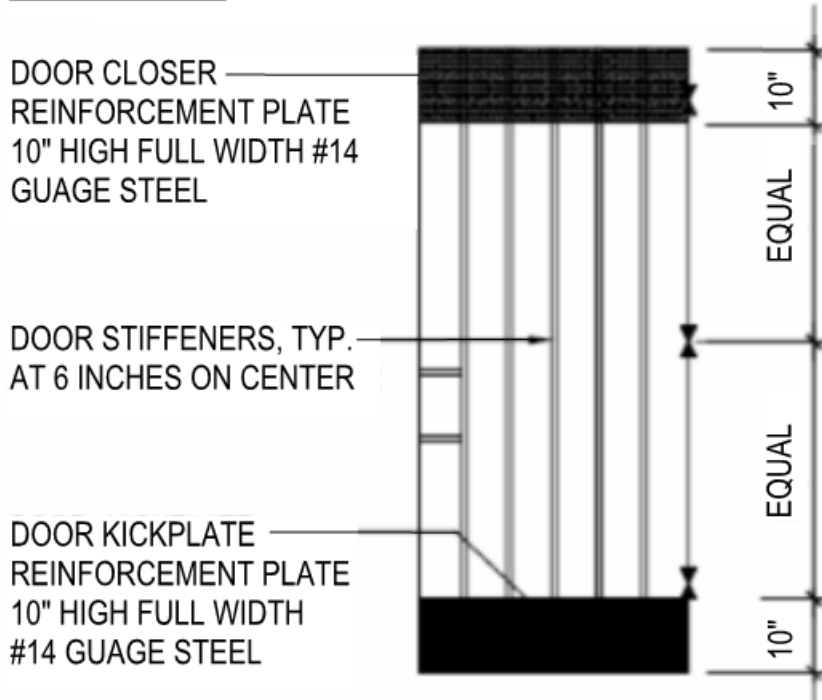
3.05 PROTECTION

- A. Protect Work of this section until Substantial Completion.

END OF SECTION

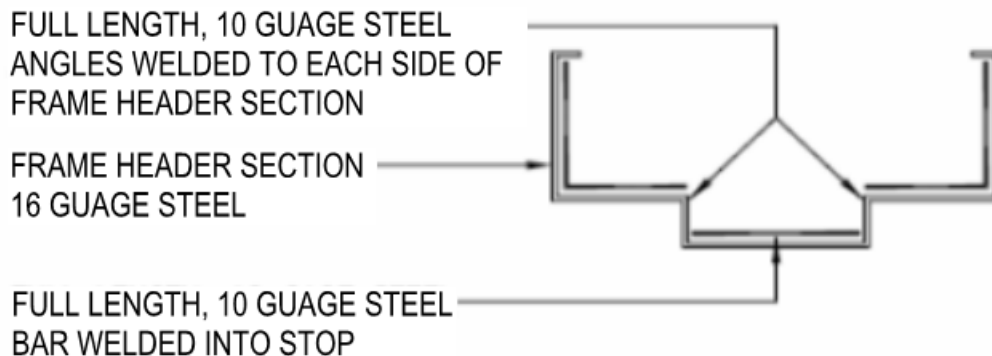
DETAIL #1 - DOOR REINFORCEMENT

ELEVATION



DETAIL #2 - DOOR HARDWARE REINFORCEMENT

DOOR CLOSER REINFORCEMENT FOR ALL STEEL DOOR FRAMES



DETAIL # 3 – CONCRETE WALL CONDITION

DETAIL FOR EXTERIOR DOOR WHERE RAIN DRIP IS REQUIRED.
EXTERIOR SIDE WITH 22 GAGE GLAVANIZED SHEET METAL OR PAINT LOCK
RAIN DRIP WELDED IN PLACE.

SPOT WELD TO FRAME AT 3 INCHES ON CENTER,
WITH WELDS WITHIN ONE INCH OF EACH END.

FRAME HEADER SECTION
16 GAGE STEEL

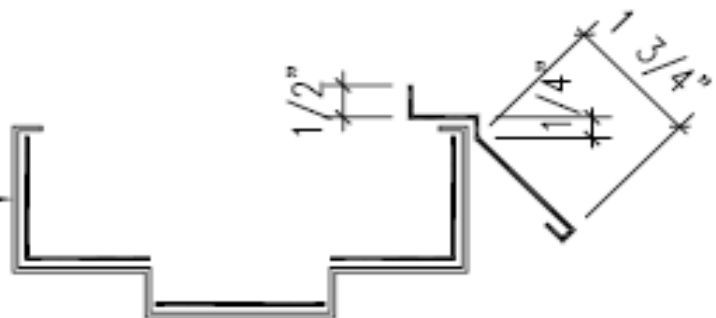


DETAIL # 3A – PLASTER WALL CONDITION

DETAIL FOR EXTERIOR DOOR WHERE RAIN DRIP IS REQUIRED.
EXTERIOR SIDE WITH 22 GAGE GLAVANIZED SHEET METAL OR PAINT LOCK
RAIN DRIP WELDED IN PLACE.

SPOT WELD TO FRAME AT 3 INCHES ON CENTER,
WITH WELDS WITHIN ONE INCH OF EACH END.

FRAME HEADER SECTION
16 GAGE STEEL



SECTION 08 3116
ACCESS PANELS AND FRAMES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Steel access panels, except those specified under Divisions 22 - Plumbing, 23 - HVAC, or 26 - Electrical.

B. Related Sections:

1. Division 01 - General Requirements.
2. Section 06 1000 - Rough Carpentry.
3. Section 09 2423 - Cement Plaster and Metal Lath.
4. Section 09 2900 - Gypsum Board.
6. Section 09 9000 - Painting and Coating.
7. Division 22 - Plumbing.
8. Division 23 - HVAC.
9. Division 26 - Electrical.

1.02 SUBMITTALS

A. Shop Drawings:

1. Indicate sizes, materials, thickness, fabrication methods, panel door and frame reinforcement, anchorage, and installation details.
2. Provide layout drawings, indicating dimensioned locations of proposed access panels, size of each panel, and installation details. Determine and indicate required access panels in finished surfaces, whether furnished under this section or as part of Work of Divisions 22-Plumbing, 23- HVAC, and 26- Electrical.

1.03 QUALITY ASSURANCE

- A. Panels shall be provided with UL listings and labels.
- B. Access panels and frames shall be products of one manufacturer.

- C. Coordinate access panels with plumbing, HVAC, and electrical work.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Panels and Frames: Provide protection as required by manufacturer to protect panels from damage during storage.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Access Panels:

<u>Non-Rated</u>	<u>Milcor</u>	<u>Karp</u>	<u>Nystrom</u>
Ceramic Tile	MS	DSC214M	NT
Plaster	K	DSC214M	NP
Drywall, Plaster Veneer	DW	DSC214M	NW

- B. Unless otherwise indicated, provide brushed stainless steel finish for panels installed in ceramic tile. Provide prime coat finish suitable for field painting for panels installed in other finishes.
- C. Access Panels shall be 18 gage minimum with vandal-proof lock operated by Allen wrench or other special tool. Exposed fastenings shall be secured with vandal-proof screws.

PART 3 - EXECUTION

3.01 GENERAL

- A. Provide access panels in finish construction, where indicated on Drawings, wherever required for access to concealed mechanical and electrical equipment, and where required by codes. Panels indicated on architectural Drawings shall be furnished under this section. Required panels for access to equipment, but not indicated on architectural Drawings, shall be furnished as part of Work requiring access.

3.02 INSTALLATION

- A. Install panels accurately in location, perfect alignment, plumb, straight and true. Brace to prevent displacement by adjacent Work.
- B. Examine panels after installation for proper opening, closing and clearances. Replace damaged or defective panels.

3.03 CLEAN UP

- A. Remove rubbish, debris and waste materials and legally dispose of off Project site.

3.04 PROTECTION

111001

- A. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 08 4113

ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Aluminum framed entrances and storefronts.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 07 9200 - Joint Sealants.
3. Section 08 5113 - Aluminum Windows.
4. Section 08 7100 - Door Hardware.
5. Section 08 8000 - Glazing.
6. Section 08 8053 – Security Glazing.
7. Section 09 2423 – Cement Plaster and Metal Lath.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM B221 – Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and tubes.
2. ASTM E283 - Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors by Uniform or Cyclic Static Air Pressure Difference.
3. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
4. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

5. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage through Installed Windows and Doors.
6. ASTM E1105 Standard test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls and Doors by Uniform or Cyclic Static Air Pressure Difference.

B. American Architectural Manufacturers Association (AAMA):

1. AAMA 611 – Voluntary Specification for Anodized Architectural aluminum.
2. AAMA 2605 – Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

C. National Fenestration Council Rating (NFRC):

1. Component Modeling Approach (CMA), CMA Software Tool (CMAST).
2. NFRC-100- Standard Procedure for Determining Fenestration Product U-factors.
3. NFRC-200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

D. Code of Federal Regulations, Title 16, Part 1201 (16 CFR 1201):

1. Consumer Product Safety Commission Safety Standard for Architectural Glazing Materials.

1.03 PERFORMANCE REQUIREMENTS

- A. Water-Resistance test: In accordance with ASTM E331. No water leakage when tested at 8 PSF (pounds per square foot) static pressure differential.
- B. Air-Infiltration: In accordance with ASTM E283. Air infiltration shall not exceed 0.06 cfm/SF at a static air pressure difference of 6.24 psf.
- C. Structural Performance: In accordance with ASTM E330. Deflection under design load shall not exceed L/175 of the clear span.
- D. Energy-Related Performance Ratings:
 1. Thermal Performance U-Factor:
 2. Solar Heat Gain Coefficient (SHGC):

3. Visible Transmittance (VT):

1.04 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings for the Work of this section, prepared and reviewed before fabrication. Include plans, elevations, opening, identification symbols, sizes, and complete details for materials, finishes, sizes, profiles, moldings, dimensioned locations of hardware items with reinforcement, methods of anchoring, assembly, installation, isolation, glazing procedure as well as reglazing procedures, materials, flashing and caulking.
- B. Product Data: Submit manufacturer's Product Data.
- C. Test Reports: Submit test reports from AAMA accredited laboratories certifying the performance requirements of Article 1.03.
- D. Material Samples: Submit the following:
 - 1. Storefront, door and frame sections with specified finish, fasteners and accessories.
 - 2. Cured sealant colors.
- E. Calculations: Provide structural calculations, signed and sealed by a structural engineer licensed in the State of California, indicating that materials furnished for installation conform to requirements specified.
- F. Deferred Approval:
 - 1. Submit to the Architect a complete set of drawings, calculations and specifications for approval.
 - 2. Documents must be signed by an engineer licensed in the State of California.
- G. Energy Performance: Submit a report or calculation for each system and glass type listing the frame, glazing and spacer components and indicating the U-Factor, solar heat gain coefficient (SHGC) and visible transmittance (VT) of the storefront assembly demonstrating conformance to project energy calculations.
 - 1. Insulated Storefronts: Submit NFRC CMAST Fenestration Calculation Report / Bid Report:
 - 2. Non-Insulated Storefronts: Submit energy calculations.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements:

1. Except for more stringent requirements specified in this Section, manufactured aluminum windows shall comply with the requirements of the CBC Part 6, California Energy Code, Section 110.6, Mandatory Requirements for Fenestration Products and Exterior Doors.
 2. Windows shall be designed to withstand the minimum loads prescribed in CBC Section 1609A.
- B. Installer Qualifications:
1. Minimum five-year experience installing windows of the type specified by this Section.
 2. Installer shall be approved by the window manufacturer as an approved installer.
- C. Manufacturer Qualifications: Minimum 5-year experience in producing aluminum windows of the type specified. Window manufacturer technical representative shall provide field services to verify window installation is in accordance with manufacturer's written instructions.
- D. Pre-Installation Conference: CONTRACTOR shall coordinate and conduct pre-installation conference in accordance with Section 01 3119, Project Meetings, to review the progress of construction activities and preparations for the installation of storefronts and other related work of this Section.

1.06 WARRANTY

- A. Manufacturer shall provide a 10-year material warranty for aluminum storefront.
- B. Manufacturer shall provide a 10-year material warranty for doors.
- C. Anodized finish of storefronts, doors and related components shall be warranted for 10 years against cracking, crazing, flaking, or blistering.
- D. Pigmented organic finished storefronts, doors and related components shall be warranted for 15 years against blistering, cracking, peeling or chipping or fading beyond AAMA 2605.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Centered Glazing:
 1. Arcadia AFG-451T Series.
 2. EFCO Series 403.

- 3. Kawneer Co. Trifab 451T.
- 4. Equal.

2.02 MATERIALS

- A. Extrusions shall be 6063-T6 alloy and temper, per ASTM B221.
- B. Fasteners: Aluminum, stainless steel, or zinc-plated steel at exposed conditions. Perimeter anchors shall be aluminum or steel. Steel anchors shall be isolated from aluminum members.
- C. Glazing Gaskets: EPDM elastomeric extrusions or vinyl reinforced with fiberglass cord.
- D. Glazing Sealants: As recommended by manufacturer for joint type.
- E. Spacers and Setting Blocks: Manufacturer's standard elastomeric type.
- F. Joint Sealants: For installation at perimeter of storefront system shall be as specified in Section 07 9200, Joint Sealants.
- G. Hardware: Finish hardware shall be as specified in Section 08 7100 - Door Hardware.
- H. Glazing: Glazing shall be as specified in Section 08 8000, Glazing.

2.03 FABRICATION

- A. Framing sections shall be 2 inches by 4-1/2-inch thermally broken by one inch glazing.
 - 1. Major portions of door sections, except glazing beads, shall be nominal 0.125 inch.
 - 2. Wall thickness of frame members shall be nominal 0.093 inch.
- B. Framing system shall provide continuous head and sill channels spliced together with formed brake metal sleeves at center of vertical mullions. The framing system shall provide for flush glazing on sides with no projecting stops. Vertical and horizontal framing members shall have a nominal face dimension and overall depth as noted above. Diverters shall be provided to collect water infiltration and divert to the exterior.
- C. Door framing members shall match storefront framing appearance. Door stiles and rails shall be tubular sections, accurately joined at corners with heavy concealed reinforcement brackets secured with bolts and screws and shall be metal inert gas (MIG) welded. Doors shall be furnished with snap-in stops with bulb glazing

gasket both sides of glass. Exposed screws are not permitted. Each door leaf shall be furnished with an adjusting mechanism, located in the top rail near the lock stile, which provides for minor clearance adjustments after installation. A hard-backed poly-pile weatherstrip shall be installed in both stiles of center hung single doors.

- D. Doors with panic hardware shall be provided with a mid rail. Panel below mid rail shall consist of a composite infill panel with a polystyrene core and 0.032 aluminum sheet on each side, by Mapes Architectural Panels, Alucabond, or equal.

2.04 FINISH

- A. Storefronts and accessories shall be furnished with an organic finish applied over a five-stage aluminum pre-treatment. Finish shall be a two-coat PVDF fluorocarbon coating system with a minimum of 1.2 mil thickness and conforming to AAMA 2605. Color as selected by ARCHITECT.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, for compliance with requirements for installation tolerances and other conditions affecting performance of work. Verify rough opening dimensions, levelness of sill plate and operational clearances. Examine wall flashings, air barriers, and other built-in components to ensure a coordinated, weather tight aluminum framed storefront installation.

3.02 INSTALLATION

- A. Install storefronts in accordance with approved shop drawings and manufacturers installation instructions. Installation shall be level, square, plumb and in proper relation to wall flashing and adjacent construction.
- B. Apply sealants to provide a weather tight installation at joints, intersections and opening perimeters. Tool sealants to fill the joint and provide a smooth finished surface.
- C. Install security glazing with Dow 795 sealant, as required by Section 08 8053, Security Glazing.

3.03 FIELD QUALITY CONTROL

- A. CONTRACTOR shall retain and pay a testing agency to conduct on-site air and water infiltration tests. On-site tests shall be conducted with CONTRACTOR, storefront manufacturer's representative, OWNER and ARCHITECT present. The ARCHITECT will select units to be tested.

- B. Ten percent of installed storefront panels will be selected for air and water testing. If one or more windows fail, an additional ten percent of windows (not including the ones previously tested) will be selected for further testing. Selection of additional ten percent of units and retesting will be preformed until no leaks occur.
- C. Water-Infiltration Test: Test will be conducted according to requirements of ASTM E1105. No water leakage is permitted. Windows will be tested at 6 pounds per square foot test pressure differential.
- D. Air-Infiltration Test: Test will be conducted according to requirements of ASTM E783. Allowable infiltration shall not exceed 0.9 cfm/SF when tested at 6.24 pounds per square foot field test pressure differential.
- E. Windows within storefronts will be tested per the requirements of Section 08 5113, Aluminum Windows.
- F. Field Test report will be submitted to the OWNER, CONTRACTOR and ARCHITECT. Field Test report will include the following:
 - 1. Name of the testing agency and testing agency's credentials.
 - 2. Date of test.
 - 3. Standards complied with during testing.
 - 4. Number and locations of specimens tested.
 - 5. Thorough analysis of test result indicating passing or failing of specimens at pressures specified.
 - 6. Photos illustrating conditions of failed compliance at pressures required.
- G. Credit to the OWNER the cost of failed tests.

3.04 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.05 CLEAN UP

- A. Remove rubbish, debris and waste materials and legally dispose off the Project site.

END OF SECTION

SECTION 08 4523
SANDWICH PANEL SKYLIGHT SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the insulated, translucent sandwich panel system and accessories as shown and specified. Work includes providing and installing:
 - 1. Flat insulated, translucent sandwich panels
 - 2. Aluminum clampite installation system
 - 3. Aluminum flashing attached to skylights
- B. Related Sections:
 - 1. Division 01 - General Requirements.
 - 2. Section 05 5000 – Metal Fabrications.
 - 3. Section 06 1000 - Rough Carpentry.
 - 4. Section 07 6000 - Flashing and Sheet Metal

1.2 SUBMITTALS

- A. Submit manufacturer's product data. Include construction details, material descriptions, profiles, and finishes of components.
- B. Submit shop drawings. Include plans, elevations, and details.
- C. Submit manufacturer's color charts showing the full range of colors available for factory finished exposed aluminum.
 - 1. Submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below.
 - a. Sandwich panels: 7" x 12" units
 - b. Factory finished aluminum: 3" long sections
- D. Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.
- E. Submit product reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.
 - 1. Reports required are:
 - a. Flame Spread and Smoke Developed (UL 723) – Submit UL Card
 - b. Burn Extent (ASTM D 635)
 - c. Color Difference (ASTM D 2244)
 - d. Impact Strength (UL 972)
 - e. Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)
 - f. Bond Shear Strength (ASTM D 1002)

- g. Beam Bending Strength (ASTM E 72)
- h. Insulation U-Factor (NFRC 100)
- i. NFRC System U-Factor Certification (NFRC 700)
- j. NFRC Visible Light Transmittance (NFRC 202)
- k. Solar Heat Gain Coefficient (NFRC or Calculations)
- l. Condensation Resistance Factor (AAMA 1503) (Thermally Broken, insulated panels only)
- m. Air Leakage (ASTM E 283)
- n. Structural Performance (ASTM E 330)
- o. Water Penetration (ASTM E 331)
- p. Fire Penetration of Exterior Wall Assemblies Using a Direct Flame Impingement Exposure (ASTM E2707)
- q. Fall Through Resistance (ASTM E 661)
- r. Class A Roof Covering Burning Brand (UL 790)
- s. UL Listed Class A Roof System (UL 790)

1.3 CLOSEOUT SUBMITTALS

- A. Provide field maintenance manual to include in project maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:

- 1. Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of those materials being satisfactorily used on at least six projects of similar size, scope, and location. At least three of the projects shall have been in successful use for ten years or longer.
- 2. Panel system must be listed by an ANSI accredited Evaluation Service, which requires quality control inspections and fire, structural, and water infiltration testing of sandwich panel systems by an accredited agency.
- 3. Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components, and production sandwich panels for conformance with AC177 "Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems" as issued by the ICC-ES.

- B. Installer's Qualifications: Installation shall be by an experienced installer, which has been in the business of installing panel systems for at least two consecutive years and can show evidence of satisfactory completion of projects of similar size, scope, and type.

1.5 PERFORMANCE REQUIREMENTS

- A. The manufacturer shall be responsible for the configuration and fabrication of the complete panel system.
 - 1. Include span analysis data.

2. Standard panel system shall have less than 0.01 cfm/ft² air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 15 PSF; and structural testing by ASTM E 330.
 3. Structural Loads. Provide skylight system capable of handling the following loads:
 - a. Live Load (PSF): 20 PSF
 - b. Wind Load (PSF): 15 PSF (ASD)
- B. Deflection Limits:
1. Unit Skylight: Limited to L/60 of clear span for each assembly component.
- C. Thermal Movements: Allow for thermal movements from ambient- and surface-temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 110 deg F (43 deg C), ambient; 150 deg F (66 deg C), material surfaces.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver panel system, components, and materials in manufacturer's standard protective packaging.
- B. Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

1.7 WARRANTY

- A. Provide manufacturer's and installer's written warranties agreeing to repair or replace panel system work, which fails in material or workmanship, within one year from the date of delivery. Failure of material or workmanship shall include deterioration of finish on metal in excess of normal weathering; and defects in accessories; insulated, translucent sandwich panels; and other components of the work.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Pyramid Skylights shall be as manufactured by Kalwall Corporation. Local Distributor: Integrated Marketing Concepts, Inc. Contact: Michelle Hough, 714-323-1070, michelle@imc-ca.com or equal by:
 1. Major Industries.
 2. Velux Wasco Skylights.
 3. Equal.

2.2 PANEL COMPONENTS

- A. Face Sheets:
 1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
 - a. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
 - b. Face sheets shall not deform, deflect, or drip when subjected to fire or flame.
 2. Interior face sheets:

- a. Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than **25** and smoke developed no greater than 450 when tested in accordance with UL 723.
 - b. Burn extent by ASTM D 635 shall be no greater than 1”.
3. Exterior face sheets:
- a. Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 3 years outdoor South Florida weathering at 5° facing south as measured on a white sample, with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
 - b. Strength: Exterior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of 70 ft. lbs. without fracture or tear when impacted by a 3-1/4” diameter, 5 lb. free-falling ball per UL 972.
 - c. Erosion Protection: Integral, embedded-glass erosion barrier.
4. Appearance:
- a. Exterior face sheet: Smooth, 0.70” thick, crystal color.
 - b. Interior face sheet: Smooth, 0.45” thick, white color.
 - c. Face sheets shall not vary more than ± 10% in thickness and be uniform in color.
- B. Grid Core:
- 1. Aluminum I-beam grid core shall be of alloy and temper recommended by manufacturer with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16”.
 - 2. I-beam Thermal break: Minimum 1”, thermoset fiberglass composite. Poured and de-bridged thermal break is not acceptable.
- C. Laminate Adhesive:
- 1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council “Acceptance Criteria for Sandwich Panel Adhesives”.
 - 2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.
 - 3. Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:
 - a. 50% Relative Humidity at 68° F: 540 PSI
 - b. 182° F: 100 PSI
 - c. Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
 - d. Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

2.3 PANEL CONSTRUCTION

- A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
 - 1. Thickness: 2-3/4 inches
 - 2. Grid Core Insulation: Fill panel cores with fiberglass batt
 - 3. Complete insulated panel system shall have NFRC certified U-factor of 0.14.
 - 4. Visible Light Transmittance (VLT): Visible LT (NFRC 202) by NFRC certified laboratory: 12%
 - 5. Solar heat gain coefficient 0.17
 - B. Standard panels shall deflect no more than 1.9" at 30 PSF in 10'-0" span without a supporting frame by ASTM E 72.
 - C. Panels shall meet the conditions of acceptance according to ASTM E2707 Fire Penetration of Exterior Wall Assemblies Using a Direct Flame Impingement Exposure:
 - 1. Absence of flame penetration through the wall assembly at any time.
 - 2. Absence of evidence of glowing combustion on the interior surface of the assembly at the end of the 60-min observation period.
 - 3. Absence of evidence of flame, glow, and smoke if the test is terminated prior to the completion of the 60-min observation period.
 - D. Thermally broken, insulated panels: Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.
 - E. Skylight System:
 - 1. Skylight system shall be UL listed as a Class A Roof by UL 790, which requires periodic unannounced factory inspections and retesting by Underwriters Laboratories.
 - F. Skylight System shall meet the fall through requirements of OSHA 1910.21 as demonstrated by testing in accordance with ASTM E 661, thereby not requiring supplemental screens or railings.
- 2.4 ALUMINUM CLAMPTITE INSTALLATION SYSTEM
- A. Aluminum clamp-tite installation system - Unit Skylight:
 - 1. Clamp-tite screw type closure system shall be of extruded aluminum alloy and temper as recommended by manufacturer.
 - B. Sealing tape: Manufacturer's standard, pre-applied to aluminum clamp-tite installation system at the factory under controlled conditions.
 - C. Fasteners: 300 series stainless steel screws for aluminum clamp-tite installation system, excluding final fasteners to the building.
 - D. Finish:
 - 1. Manufacturer's KCRF factory applied finish, which meets the performance requirements of AAMA 2604. Color to be aluminum #79.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Installer shall examine substrates, supporting structure, and installation conditions.

- B. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by sealant manufacturer for this purpose.
2. Where aluminum will contact concrete, masonry, or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by sealant manufacturer.

3.3 INSTALLATION

A. Install the panel system in accordance with the manufacturer's fabrication drawings and suggested installation instructions.

1. Anchor component parts securely in place by permanent mechanical attachment system.
2. Accommodate thermal and mechanical movements.
3. Seal aluminum clamp-tite installation system as shown on the manufacturer's fabrication drawings and suggested installation instructions.

B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's fabrication drawings and suggested installation instructions.

3.4 FIELD QUALITY CONTROL

A. Water Test: Installer to test a representative section of installed materials according to procedures in AAMA 501.2.

B. Repair or replace work that does not pass testing or that is damaged by testing and retest work.

3.5 CLEANING

A. Clean the panel system, interior and exterior, immediately after installation.

B. Refer to manufacturer's written recommendations.

END OF SECTION 084523

SECTION 08 7100

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Related Sections:

1. Section 081000 - Metal Doors and Frames.
2. Section 081400 - Wood Doors.
3. Section 083100 - Access Doors and Panels.
4. Section XXXXXX – Fire Department Lock Boxes

1.2 SUBMITTALS

A. General: Submit in accordance with Section 013300.

1. Submit swinging pedestrian frame and door sections submittals simultaneously with submittals for this section.

B. Product Data: For each item.

1. Include sample of warranty customized for this project.

C. Hardware Schedules: Indicate hardware required for each opening.

1. Use same reference numbers for openings as Drawings.
2. Include glossary of abbreviations, symbols and codes contained in schedule.
3. Coordinate schedule with submittal requirements of related door and frame Sections.
4. Include product name, catalog number, and manufacturer of each item.
5. Include type, style, model number, function, size, fastenings, finish and other pertinent data for each item.
6. Indicate degree of opening for closers, overhead stops, overhead holders, and other similar hardware items.

D. Keying Schedule: Submit separate detailed schedule for Owner's review after Hardware Schedule has received Architect's approval.

- E. Templates: Furnish templates and approved Hardware Schedule to door and frame fabricators. Where fabricator cannot work to paper templates, furnish physical hardware.
 - 1. Ship templates and physical hardware to factories of respective manufacturers; prepay costs for shipping and delivery.
- F. Closeout Submittals: Submit following in accordance with Section 017800.
 - 1. Operation and maintenance data.
 - 2. Warranty.

1.3 **QUALITY ASSURANCE**

- A. General Requirements: Hardware has been specified by manufacturer's name, brand and catalog numbers for purpose of establishing basis for quality, design and operational function.
 - 1. Except where specifically indicated otherwise, equivalent products from other listed manufacturers are also acceptable.
 - 2. Provide designated product, or where more than one product or manufacturer is listed, provide equivalent product of one of other listed manufacturers.
 - 3. Obtain each type of hardware from single manufacturer.
 - 4. Hardware Sets within this Section are not complete with respect to thicknesses of doors, hand, backset, method of fastening, and other detail requirements.
 - 5. Review Drawings and Door Schedules thoroughly and provide required hardware for openings, including openings which may have been inadvertently omitted from Door Schedules.
 - 6. Should opening be omitted or opening not indicated with hardware set, provide hardware of same quality, design and function as specified for similar openings.
 - 7. Furnish hardware complete with brackets, plates, fittings, fastenings and other accessories required for installation.
 - 8. Provide screws, nuts, bolts, through-bolts, washers, grommets and other fastening devices necessary for proper installation of hardware; match finish of hardware being attached. Non-ferrous or corrosion resistant type required where exposed to exterior atmosphere.

9. Provide concealed fastening wherever possible. Where exposed, use countersunk Phillips oval-head type screws, except flat head for hinges.
 10. Do not attach hardware to metal frames and metal doors with self-tapping or sheet metal screws.
 11. Wood Screws: Full thread.
 12. Machine Screws: Undercut head and full thread.
 13. Hardware Items Affixed to Concrete, Masonry, or Stone: Machine screws and threaded expansion shields.
 14. Provide door closers at fire-rated openings.
 15. Through-bolts: Not permitted. Anchor overhead door closers at fire-rated doors with screws, fastened to blocking in door
- B. Regulatory Requirements: Comply with Authorities Having Jurisdiction.
1. Comply with NFPA 80 for hardware at fire-rated assemblies.
 2. Provide hardware which has been tested and listed by UL or Warnock Hersey for fire-rated assemblies of types which comply with requirements of door and frame labels.
- C. Hardware Supplier Qualifications: Builders hardware supplier who has been furnishing hardware in Project's vicinity for period of not less than two years, and who is, or who employs Architectural Hardware Consultant (AHC) who will be available at reasonable times during course of Work for consultation about Project's hardware requirements.
- D. Certification: After completion of hardware installation, submit written certification attesting that hardware has been installed in accordance with manufacturer's templates and instructions.
1. Engage third-party inspection service for fire-door assemblies, submit report listing fire-rated assemblies as having zero deficiencies.
- E. Manufacturer's Identifications: Nameplates, trademarks, logos, and other identification marks not allowed on surfaces exposed to view, except for required UL or Warnock Hersey labels and faceplates of locking and latching devices.

1.4 **DELIVERY, STORAGE, AND HANDLING**

- A. Comply with Section 016000.

1. Pack each hardware item separately. Include manufacturer's printed installation instructions, trim, fasteners, accessories, and special tools necessary for installation.
2. Legibly mark and adequately label each package indicating opening for which intended. Provide markings corresponding with approved Hardware Schedule.
3. Store hardware off the floor on adequate shelving, in a clean, dry and secure area to protect from damage and loss.

1.5 WARRANTY

- A. Special Warranty: Prepare and submit in accordance with Section 017800.
 1. Manufacturer's warranty stating closers will be free from defects in materials and workmanship for period of ten years, except for electrical or pneumatic components which are warranted for period of two years.
- B. Maintenance Materials: Furnish not less than three sets of special tools necessary for adjustment and installation of hardware.
 1. At Contract close-out, deliver special tools to Architect for presentation to Owner. Include an additional 20 privacy lock release tools. Intent: readily available for staff to rescue children in sgl-occupant restrooms who require assistance.

PART 2 - PRODUCTS

2.1 HINGES

- A. Acceptable Manufacturers:
 1. Hager Hinge Co., St. Louis, MO.
 2. Bommer Industries (basis of design)
 3. Ives, Indianapolis, IN
 4. McKinney, Scranton, PA.
 5. Stanley Hardware Division of Stanley Works, New Britain, CT.
- B. Butt Hinges: ANSI A156.1 and A156.7.
 1. Three knuckle design with square corners.
 2. Concealed bearing design required; exposed bearing design not allowed.

- C. Minimum Number Hinges:
 - 1. Doors 5 feet or Less in Height: two hinges.
 - 2. Doors Over 5 feet and Not Over 90 inches: three hinges.
 - 3. Doors Over 90 inches: One hinge for each additional 30 inches height or fraction thereof.

2.2 **KEYING**

- A. Consult with Owner, initiate and conduct keying conference, prepare detailed keying schedule accordingly.
 - 1. Manufacturer's small-format interchangeable core system
 - a. Falcon: basis-of-design
 - 2. Key locksets and cylinders to new factory established and recorded system.
 - 3. Furnish temporary construction cores, ship factory-combinated cores and cut keys via secured delivery to Owner's agent.
 - 4. For bid purposes, use the Following Quantities:
 - a. Grandmasterkeys (MGK): 6
 - b. Masterkeys (MK - each set): 20
 - c. Changekeys (per lock): Two
 - d. Control Keys: Six
 - e. Construction Masterkeys: 35
- B. Identification and Control:
 - 1. Identify grandmaster and masterkeys with registry number; do not stamp with MASTER, letter M, or other similar identification.
 - 2. Stamp all keys with DO NOT DUPLICATE.
 - 3. Furnish visual control system; coordinate provisions with Owner. Stamp or emboss keys with identification code.

2.3 **LOCKING AND LATCHING DEVICES**

- A. Manufacturers: Products specified are manufactured by Falcon Lock (Allegion) to establish standard of quality, function, and design.
 - 1. Products of Equivalent Quality, Function and Design by Following Are Also Acceptable:
 - a. Corbin Russwin, Inc, Berlin, CT.
 - b. Sargent, New Haven, CT.
 - c. PDQ
- B. Mortise Locksets and Latchsets: ANSI A156.13, Grade 1.

2.4 **EXIT DEVICES**

- A. Basis for Design; Von Duprin [35 series](#) and [Falcon 24 series](#), as scheduled in Hardware Sets with functions and trim as noted.
- B. Gates: Detex brand V40 series weatherized devices carrying manufacturer's 10-year warranty.

2.5 **SURFACE MOUNTED CLOSERS**

- A. Acceptable Manufacturers:
 - 1. LCN Closers, Princeton, IL. , and Falcon (both are basis-of-design)
 - 2. Norton Door Controls, Charlotte, NC.
 - 3. Sargent, New Haven, CT.
- B. Required Features: rack-and-pinion operation.
 - 1. Regular or parallel arm mounting.
 - 2. Rack and pinion construction with compression spring, fully hydraulic.
 - 3. Closing speed and latching speed controlled by independently operated valves.
 - 4. Adjustable spring power allowing adjustment up to 50 percent in field to suit individual door conditions.
 - 5. Adjustable backcheck for interior and exterior units.

6. Maximum operating force of 5 pounds for interior and exterior doors, and up to 15 pounds maximum for fire-labeled doors.
 7. Size as recommended by manufacturer for door size and weight.
 8. Hold open and deadstop features where indicated in Hardware Sets.
 9. Adjustable hydraulic delayed action feature where indicated in Hardware Sets.
- C. Accessories: Manufacturer's standard full size metal or non-metallic cover where indicated in Sets.
1. Furnish with necessary arms, tracks, brackets, plates, shoes, and other accessories to suit door and frame conditions.
 2. Finish accessories to match cover.
- D. Mounting: Refer to hardware locations.

2.6 DOOR STOPS

- A. Acceptable Manufacturers:
1. Baldwin Hardware Corp., Reading, PA.
 2. Brookline Industries, Inc., Chicago, IL.
 3. Don-Jo, Sterling, MA.
 4. Hiawatha, Inc., Bloomington, MN.
 5. Ives, Indianapolis, IN.
 6. Rockwood Manufacturing Co., Rockwood, PA.
 7. Triangle Brass Manufacturing Co., Inc., (Trimco), Oceanside, CA. (basis-of-design)

2.7 PUSH/PULL TRIM AND PLATES

- A. Acceptable Manufacturers:
1. Baldwin Hardware Manufacturing Corp., Reading, PA.
 2. Don-Jo, Sterling, MA.
 3. Hiawatha, Inc., Bloomington, MN.

4. Ives, Indianapolis, IN. (basis-of-design)
 5. Rockwood Manufacturing Co., Rockwood, PA.
 6. Triangle Brass Manufacturing Co. (Trimco), Oceanside, CA.
- B. Protection Plates: Stainless steel, square corner design, 0.050 inch thickness.
1. Size: When mounted on push side of door, 1 inch less than door width at pair of doors and 1.5 inches less than door width at single doors. When mounted on pull side of door, 1 inch less than door width.
 2. Kick Plates: Beveled four edges, 12 inch height unless indicated otherwise in Hardware Sets.

2.8 MISCELLANEOUS HARDWARE

- A. Acceptable Manufacturers:
1. Baldwin Hardware Manufacturing Corp, Reading, PA.
 2. Brookline Industries, Inc., Chicago, IL.
 3. Don-Jo, Sterling, MA.
 4. Door Controls International, Ann Arbor, MI.
 5. Glynn-Johnson, Chicago, IL.
 6. Hiawatha, Inc., Bloomington, MN.
 7. Ives, Indianapolis, IN.
 8. Rixson-Firemark, Franklin Park, IL.
 9. Rockwood Manufacturing Co., Rockwood, PA.
 10. Stanley Hardware Division of Stanley Works, New Britain, CT.
 11. Triangle Brass Manufacturing Co. (Trimco), Oceanside, CA. (basis-of-design).
- B. Stops and Holders:
1. Surface Overhead Holders: Equivalent to Glynn-Johnson 450 Series (basis-of-design).

2.9 WEATHERSTRIPPING, SEALS AND THRESHOLDS

- A. Acceptable Seal Manufacturer:
 - 1. Door Hardware Systems, New York.
 - a. Four-fin design, adhesive warranted life-of-building.
- B. Thresholds:
 - 1. Thresholds: Extruded mill-finish aluminum with 1/4 inch diameter flat-head sleeve anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 017300.

3.2 INSTALLATION

- A. Install hardware plumb, level, and true to line in accordance with manufacturer's templates, Section 017300, and Project conditions.
 - 1. Install fire rated hardware in accordance with NFPA 80.
 - 2. Where cutting and fitting is required on substrates to be field painted or similarly finished, install, fit, remove and store hardware prior to finishing. Reinstall hardware after finishing operations are completed.
 - 3. Do not install surface mounted items until finishes have been completed on substrate.
 - 4. Reinforce attachment substrates as necessary for installation and operation.
 - 5. For substrates which are not factory prepared for hardware:
 - a. Mortise work to correct size and location without gouging, splintering or causing irregularities in exposed finish work.
 - b. Fit faces of mortised components snug and flush without excessive clearance.
 - 6. Set thresholds at exterior doors in bed of sealant. Remove excess sealant.

3.3 ADJUSTING

- A. Check and adjust each operating hardware item to ensure correct operation and function.
 - 1. Ensure weatherstripping and seals do not inhibit closing and positive latching of door.
 - 2. Lubricate moving or operating components as recommended by hardware manufacturer. Use graphite type lubrication if none other is recommended.
 - 3. Replace defective materials or units which cannot be adjusted to operate as intended. Reinstall items found improperly installed.
 - 4. Prior to date of Substantial Completion, readjust and relubricate hardware items as necessary.

3.4 **DEMONSTRATION**

- A. Demonstration and Instruction of Owner's Personnel: Provide in accordance with Section 019200.
 - 1. Instruct Owner's designated personnel in proper adjustment and maintenance of hardware.
 - 2. In presence of Owner's representative, demonstrate that keys operate freely in designated unit.
 - 3. Hardware supplier: Completely set-up key control system with keys tagged and placed in cabinet, cross index system executed with appropriate information typed in on index cards, and instruct Owner's designated personnel in proper use of system.

3.5 **HARDWARE SETS**

HW SET: 01 EXTERIOR MAIN ENTRY, STOREFRONT, REMOTE RELEASE "BUZZ-IN"

2	EA	CONTINUOUS HINGE	SL18HD ATW	628	SEL
1	EA	PANIC HARDWARE 3549A-EO QEL-RX-LC		619	VON
1	EA	PANIC HARDWARE 3549A-NL-OP QEL-RX-LC		619	VON
1	EA	SFIC RIM CYL	C953-7 WIC+BRASSTEMPCORE	626	FAL
1	EA	SFIC MORT CYL (KEYSWITCH)	C987-7 WIC+BRASSTEMPCORE, +1/4"BLCKG-RING	626	FAL
1	EA	ELECTROMAGNETIM452P C LOCK		628	SCE
2	EA	OFFSET PULL	8312 12"CTC 'O'-MOUNT	630	IVE
2	EA	TOP-JAMB SRFC CLSR	4021M 18 DEL	BRT	LCN
2	EA	OVERHEAD HOLDER	100H	630	GLY
2	EA	SWEEP	200U POLYURETHANE	628	NGP
1	EA	THRSHLD	513 OR 653, COMBO	710	NGP
1	EA	POWER SUPPLY	PS904-FA-BBK		SCE
1	EA	KEYSWITCH	653-0405 L2 ATS	630	SCE
1	EA	PUSHBUTTON CONSOLE	8204 2-BUTTONS: MOMENTARY SWITCHING		SCE

OPERATION:

BUSINESS HOURS/SECURE: PANIC HARDWARE LATCHES ARE PROJECTED/LOCKED,
AND ELECTROMAGNETIC LOCKS ("MAGLOCKS") ARE ENERGIZED/LOCKED USING

THE KEYSWITCH -- KEYSWITCH LED LAMP DISPLAYS RED. FOR ENTRY, USER APPROACHES DOOR, USES KEY IN KEYSWITCH TO MOMENTARILY UNLOCK BOTH THE PANIC HARDWARE AND THE MAGLOCKS -- KEYSWITCH LED LAMP MOMENTARILY DISPLAYS GREEN -- USER PULLS EITHER DOOR LEAF OPEN AND ENTERS. ALTERNATIVELY, USER GAINS RECEPTIONIST'S ATTENTION, WHO THEN MOMENTARILY UNLOCKS THE DOOR USING THE DESK CONSOLE BUTTON. TO EXIT, USER SIMPLY USES THE PANIC HARDWARE; PRESSING THE DEVICE TOUCHBAR SIMULTANEOUSLY RETRACTS THE BOLTS AND OPENS AN INTERNAL SWITCH THAT UNLOCKS THE MAGLOCKS.

BUSINESS HOURS/OPEN-DOOR: KEYSWITCH IS TURNED OTHER DIRECTION, PANIC HARDWARE LATCHES ARE HELD ELECTRICALLY RETRACTED AND MAGLOCKS ARE DE-ENERGIZED, DOOR OPERATES PUSH/PULL.

POWER, CONDUIT, WIRING, FIRE&LIFE-SAFETY SYSTEM COORDINATION REQ'D. IF IN HOLD-OPEN POSITION, DOOR(S) MUST RELEASE TO CLOSE AND POSITIVELY-LATCH IN AN ALARM EVENT.

FIRE/LIFE-SAFETY ALARM EVENT: POWER SUPPLY IS GOVERNED BY THE ALARM SYSTEM, AND IS CUT-OFF / SHUT-DOWN / UNENERGIZED, LEAVING THE MAGLOCKS UNLOCKED, BUT LEAVING THE PANIC HARDWARE LATCHES PROJECTED, KEEPING THE DOOR SECURED.

POWER, CONDUIT, WIRING, FIRE&LIFE-SAFETY SYSTEM COORDINATION REQ'D.

HEAD, JAMB, AND MEETING-STILE SEALS: PART OF STOREFRONT FRAME AND DOOR SYSTEM.

HW SET: 02 EXTERIOR ENTRY: STOREFRONT DEADLOCK

1	EA	CONTINUOUS HINGE	SL18HD	628	SEL
1	EA	STOREFRONT DEADLOCK	MS1951SW+4089+MS4043	630	ADA
2	EA	MORTISE CYLINDER	C977-7 WIC+BRASSTEMPCORE	626	FAL
1	SET	PUSH/PULL BAR	8312 12"CTC 'NO'-MOUNT, PLUS 9100HD 'NO'-MOUNT	630	IVE
1	EA	TOP-JAMB SRFC CLSR	4021M 18 DEL	BRT	LCN

1	EA	OVERHEAD HOLDER	100H	630	GLY
1	EA	SWEEP	200U POLYURETHANE	628	NGP
1	EA	THRSHLD	513 OR 653, COMBO	710	NGP
1	EA	DOOR POSITION SWITCH	679		SCE

HEAD & JAMB SEALS: PART OF STOREFRONT FRAME AND DOOR SYSTEM.

HW SET: 03 EXTERIOR ENTRY: PANIC HDW

1	EA	CONTINUOUS HINGE	SL18HD	628	SEL
1	EA	PANIC DEVICE	24-R-NL-718C	630	FAL
1	EA	SFIC RIM CYL	C953-7 WIC+BRASSTEMPCORE	626	FAL
1	EA	OFFSET PULL	8312 12"CTC 'O'-MOUNT	630	IVE
1	EA	TOP-JAMB SRFC CLSR	4021M 18 DEL	BRT	LCN
1	EA	OVERHEAD HOLDER	100H	630	GLY
1	EA	SWEEP	200U POLYURETHANE	628	NGP
1	EA	THRSHLD	513 OR 653, COMBO	710	NGP
1	EA	DOOR POSITION SWITCH	679		SCE

HEAD & JAMB SEALS: PART OF STOREFRONT FRAME AND DOOR SYSTEM.

HW SET: 04 EXTERIOR UTILTIY RM ENTRY: PR DRS, 3FT + 2FT UNEQUAL WIDTH LEAFS

2	EA	CONTINUOUS HINGE	SL24HD			SEL
1	EA	SPRING BOLT	0514.00036 X 5FT CHAIN	689		RIC
1	EA	CANE BOLT	0524.00021, 2 KEEPERS	602		RIC
1	EA	UTILITY RM LK	MA571G7 QN +BRASSTEMPCORE +INDICATOR	630		FAL
1	EA	SS ARMOR COLLAR	A08794-00X	630		FAL
1	EA	STEEL ASTRAGAL	139SP SNB	600		NGP
1	EA	SURFACE CLOSER	SC81 HWP	689		FAL
1	EA	DOOR HOLDER	PAH60 SRI	689		LCN
1	EA	O.H. RAIN DRIP	16 4"MDW	628		NGP
1	SET	SEALS	5075C HEAD/JAMBS	BLK		NGP
1	EA	MTG-STILE SEAL	TPE 5070	BRN		NGP
2	EA	SWEEP	200U POLYURETHANE	628		NGP
1	EA	THRSHLD	513 OR 653, COMBO	710		NGP

COORDINATION ITEM: ENSURE THAT TOPS OF OUTSWINGING EXTERIOR HM DOORS ARE FLUSH AND WATER-TIGHT.

HW SET: 05 EXTERIOR UTILTIY RM ENTRY: SGL DR

2	EA	CONTINUOUS	SL24HD			SEL
---	----	------------	--------	--	--	-----

HINGE

1	EA	UTILITY RM LK	MA571G7 QN +BRASSTEMPCORE +INDICATOR	630	FAL
1	EA	SS ARMOR COLLAR	A08794-00X	630	FAL
1	EA	LOCK GUARD	5000	626	TRI
1	EA	SURFACE CLOSER	SC81 HWP	689	FAL
1	EA	FLOOR STOP	1209	BLK	TRI
1	EA	O.H. RAIN DRIP	16 4"MDW	628	NGP
1	SET	SEALS	5075C HEAD/JAMBS	BLK	NGP
1	EA	SWEEP	200U POLYURETHANE	628	NGP
1	EA	THRSHLD	513 OR 653, COMBO	710	NGP

COORDINATION ITEM: ENSURE THAT TOPS OF OUTSWINGING EXTERIOR HM DOORS ARE FLUSH AND WATER-TIGHT.

HW SET: 06 EXTERIOR ENTRY: WD DR, LOCKSET

1	EA	CONTINUOUS HINGE	SL24HD		SEL
1	EA	CLSSRM SECURITY LK	MA431G7 QG +BRASSTEMPCORE +INDICATOR	630	FAL
1	EA	SS ARMOR COLLAR	A08794-00X	630	FAL
2	EA	MORTISE CYLINDER	C977-7 WIC+BRASSTEMPCORE	626	FAL
1	EA	LOCK GUARD	5000	626	TRI
1	EA	SURFACE CLOSER	SC71 SSHO +18PA	689	FAL

1	EA	KICKPLATE	KO.050 12"X1.5"LDW CTSNK B4E	630	TRI
1	EA	DOOR CAP	90 US .038"	630	SBH
1	EA	O.H. RAIN DRIP	16 4"MDW	628	NGP
1	SET	SEALS	5075C HEAD/JAMBS	BLK	NGP
1	EA	SWEEP	200U POLYURETHANE	628	NGP
1	EA	THRSHLD	513 OR 653, COMBO	710	NGP
1	EA	DOOR POSITION SWITCH	679		SCE

HW SET: 07 INTERIOR RECEPTION DR: REMOTE RELEASE "BUZZ-IN"

2	EA	CONTINUOUS HINGE	SL18HD ATW	628	SEL
1	EA	PANIC HARDWARE	3549A-EO QEL-RX-LC	619	VON
1	EA	PANIC HARDWARE	3549A-NL-OP QEL-RX-LC	619	VON
1	EA	SFIC RIM CYL	C953-7 WIC+BRASSTEMPCORE	626	FAL
1	EA	ELECTROMAGNETIC LOCK	M452P	628	SCE
2	EA	OFFSET PULL	8312 12"CTC 'O'-MOUNT	630	IVE
2	EA	TOP-JAMB SRFC CLSR	4021M 18 DEL	BRT	LCN
1	EA	OVERHEAD HOLDER	100H	630	GLY
1	EA	UNIVRSL DOME STOP	1211	626	TRI
1	EA	POWER SUPPLY	PS904-FA-BBK		SCE
2	EA	FINGER GUARD	MK1A PUSH SIDE PROTECTION		FIN

OPERATION:

BUSINESS HOURS/SECURE: PANIC HARDWARE LATCHES ARE PROJECTED/LOCKED, AND ELECTROMAGNETIC LOCKS ("MAGLOCKS") ARE ENERGIZED/LOCKED USING THE KEYSWITCH -- KEYSWITCH LED LAMP DISPLAYS RED. FOR ENTRY, USER APPROACHES DOOR, USES KEY IN KEYSWITCH TO MOMENTARILY UNLOCK BOTH THE PANIC HARDWARE AND THE MAGLOCKS -- KEYSWITCH LED LAMP MOMENTARILY DISPLAYS GREEN -- USER PULLS EITHER DOOR LEAF OPEN AND ENTERS. ALTERNATIVELY, USER GAINS RECEPTIONIST'S ATTENTION, WHO THEN MOMENTARILY UNLOCKS THE DOOR USING THE DESK CONSOLE BUTTON (IN HWSET 01). TO EXIT, USER USES THE PANIC HARDWARE; PRESSING THE DEVICE TOUCHBAR SIMULTANEOUSLY RETRACTS THE BOLTS AND OPENS AN INTERNAL SWITCH THAT UNLOCKS THE MAGLOCKS.

BUSINESS HOURS/OPEN-DOOR: KEYSWITCH IS TURNED OTHER DIRECTION, PANIC HARDWARE LATCHES ARE HELD ELECTRICALLY RETRACTED AND MAGLOCKS ARE DE-ENERGIZED, DOOR OPERATES PUSH/PULL.

POWER, CONDUIT, WIRING, FIRE&LIFE-SAFETY SYSTEM COORDINATION REQ'D. IF IN HOLD-OPEN POSITION, DOOR(S) MUST RELEASE TO CLOSE AND POSITIVELY-LATCH IN AN ALARM EVENT.

FIRE/LIFE-SAFETY ALARM EVENT: POWER SUPPLY IS GOVERNED BY THE ALARM SYSTEM, AND IS CUT-OFF / SHUT-DOWN / UNENERGIZED, LEAVING THE MAGLOCKS UNLOCKED, BUT LEAVING THE PANIC HARDWARE LATCHES PROJECTED, KEEPING THE DOOR SECURED.

POWER, CONDUIT, WIRING, FIRE&LIFE-SAFETY SYSTEM COORDINATION REQ'D.

HW SET: 08 CLASSROOM ENTRY

3	EA	STD-WT HINGE	LB8000 4.5 X 4.0	652	BOM
1	EA	CLASSROOM LOCK	T381G7D Q +TEMPCORES	626	FAL
1	EA	SURFACE CLOSER	SC81 DEL RWPA H	689	FAL
1	EA	KICKPLATE	KO.050 12"X1.0"LDW CTSNK B4E	630	TRI
1	EA	KICKPLATE	KO.050 12"X1.5"LDW CTSNK B4E	630	TRI
1	EA	WALL STOP	1270WX	630	TRI
1	SET	SEALS	5075C HEAD/JAMBS	BLK	NGP

1 SET FINGER GUARD MK1A + MK1B PUSH+PULL SIDE PROTECTION FIN

CLASSROOM SECURITY LOCK: WHEN LOCKED, KEY OUTSIDE RETRACTS LATCHBOLT. KEY INSIDE LOCKS/UNLOCKS OUTSIDE LEVER. STAFF CAN LOCK DOOR FROM INSIDE, NOT NEEDING TO SWING THE DOOR OPEN TO ACCESS THE OUTSIDE LEVER.

ALWAYS FREE UNIMPEDED EGRESS, INSIDE LEVER IS NOT LOCKABLE.

OMIT DOOR CLOSER HOLD-OPEN OPTION AT FIRE-RATED OPENINGS.

HW SET: 09 STUDENT SGL-OCC TOILET, FULL-HT DR

3	EA	STD-WT HINGE	LB8000 4.5 X 4.0	652	BOM
1	EA	PRIVACY SET	B301S Q	626	FAL
1	EA	SURFACE CLOSER	SC81 DEL RWPA H	689	FAL
1	EA	KICKPLATE	KO.050 12"X1.0"LDW CTSNK B4E	630	TRI
1	EA	KICKPLATE	KO.050 12"X1.5"LDW CTSNK B4E	630	TRI
1	EA	WALL STOP	1270WX	630	TRI
1	SET	SEALS	5075C HEAD/JAMBS	BLK	NGP
1	EA	COAT/HAT HOOK	3071	626	TRI
1	SET	FINGER GUARD	MK1A + MK1B PUSH+PULL SIDE PROTECTION		FIN

LOCATE HOOK @ 41"FFF

DR CLOSER @ 5B-19A: USE "SPRING-N-STOP HOLD-OPEN" TYPE ARM, OMIT FLOOR OR WALL STOP.

HW SET: 10 STUDENT SGL-OCC TOILET, HALF-HT GATE, NON-LATCHING

2	EA	STD-WT HINGE	LB8000 4.5 X 4.0	652	BOM
1	EA	PASSAGE SET	B101S Q	626	FAL
1	EA	CONCEALED CLOSER	"PERKO" R100	652	S-H
1	EA	KICKPLATE	KO.050 12"X1.0"LDW CTSNK B4E	630	TRI
1	EA	KICKPLATE	KO.050 12"X1.5"LDW CTSNK B4E	630	TRI
1	EA	WALL STOP	1270WX	630	TRI
1	SET	FINGER GUARD	MK1A + MK1B PUSH+PULL SIDE PROTECTION		FIN

HW SET: 11 STORAGE CLOSET

3	EA	STD-WT HINGE	LB8000 4.5 X 4.0	652	BOM
1	EA	KEYED CLOSET LK	B561G7 Q	626	FAL
1	EA	KICKPLATE	KO.050 12"X1.0"LDW CTSNK B4E	630	TRI
1	EA	KICKPLATE	KO.050 12"X1.5"LDW CTSNK B4E	630	TRI
1	EA	WALL STOP	1270WX	630	TRI
1	SET	SEALS	5075C HEAD/JAMBS	BLK	NGP
1	SET	FINGER GUARD	MK1A + MK1B PUSH+PULL SIDE PROTECTION		FIN

LOCATE HOOK @ 41"FF

DR CLOSER @ 5B-19A: USE "SPRING-N-STOP HOLD-OPEN" TYPE ARM, OMIT FLOOR OR WALL STOP.

HW SET: 12 STAFF SGL-OCC TOILET, FULL-HT DR

3	EA	STD-WT HINGE	LB8000 4.5 X 4.0	652	BOM
1	EA	STAFF PVCY LK	MA311 QN +INDICATOR "OCCUPIED/VACANT"	630	FAL
1	EA	SURFACE CLOSER	SC81 DEL RWPA H	689	FAL
1	EA	KICKPLATE	KO.050 12"X1.0"LDW CTSNK B4E	630	TRI
1	EA	KICKPLATE	KO.050 12"X1.5"LDW CTSNK B4E	630	TRI
1	EA	WALL STOP	1270WX	630	TRI
1	SET	SEALS	5075C HEAD/JAMBS	BLK	NGP
1	EA	COAT/HAT HOOK	3071	626	TRI
1	SET	FINGER GUARD	MK1A + MK1B PUSH+PULL SIDE PROTECTION		FIN

HW SET: 13 STAFF LOUNGE, KITCHEN, PANTRY

3	EA	STD-WT HINGE	LB8000 4.5 X 4.0	652	BOM
1	EA	CLASSROOM LOCK	T381G7D Q +TEMPCORES	626	FAL
1	EA	SURFACE CLOSER	SC81 DEL RWPA H	689	FAL
1	EA	KICKPLATE	KO.050 12"X1.0"LDW CTSNK B4E	630	TRI
1	EA	KICKPLATE	KO.050 12"X1.5"LDW CTSNK B4E	630	TRI
1	EA	WALL STOP	1270WX	630	TRI

1	SET	SEALS	5075C HEAD/JAMBS	BLK	NGP
1	SET	FINGER GUARD	MK1A + MK1B PUSH+PULL SIDE PROTECTION		FIN

HW SET: 14 PANTRY CLOSET: MAGNETIC LATCHES

6	EA	STD-WT HINGE	LB8000 4.5 X 4.0	652	BOM
2	EA	6" LADDER PULL	571-6 + 4/BP1	619	TRI
2	EA	OVERHEAD HOLDER	450F	689	GLY
2	EA	SILENCER (METAL FRM)	1229A	GRY	TRI
4	EA	MAGNETIC CATCH	327	673	IVE

HW SET: 15 JANITOR CLOSET

3	EA	STD-WT HINGE	LB8000 4.5 X 4.0	652	BOM
1	EA	STORERM LK	B581G7 Q	626	FAL
1	SET	SEALS	5075C HEAD/JAMBS	BLK	NGP

HW SET: G-PH PLAY YARD GATE W/ PANIC HDW

1	SET	GATE HINGE/CLSER SYS	MAMMOTH-180	BLK	LCX
1	EA	WEATHERIZED PH	V40 X W, 08BN HD	689	DET

1	EA	SFIC RIM CYL	C953-7 WIC+BRASSTEMPCORE	626	FAL
1	EA	HD TALL FLOOR STOP+H.O.	1209HAHO	BLK	TRI

HW SET: G-UTIL UTILITY SPACE GATE W/ PADLOCK

1	EA	PADLOCK	AS NEEDED, SFIC		FAL
---	----	---------	-----------------	--	-----

HINGES/PIVOTS, BOLT, STOPPING DEVICE: PART OF GATE FABRICATOR PACKAGE.

HW SET: G-ELECT TRANSFORMER PAD, PANIC HDW EXIT

1	EA	WEATHERIZED PH	V40 X W, 08BN HD	689	DET
1	EA	PADLOCK	AS NEEDED, SFIC		FAL
1	EA	SFIC RIM CYL	C953-7 WIC+BRASSTEMPCORE	626	FAL

PANIC HARDWARE ON ACTIVE LEAF LATCHES INTO INACTIVE LEAF; INACTIVE LEAF IS BOLTED TO GROUND USING A PADLOCKABLE BOLT.

HINGES/PIVOTS, BOLT @ INACTIVE LEAF, STOPPING DEVICES: PART OF GATE FABRICATOR PACKAGE.

DESIGN/FABRICATE GATE WITH NON-REACH-THROUGH DESIGN PANEL 12" ABOVE AND 12" BELOW PANIC HDW'S CENTERLINE.

END OF SECTION

Door Schedule

Mark	Door No.	HwSet	Mode	Width	Height	Thick	Door	Frame	Rating	Outside / Inside Location Remarks
D01	D01	01.	PR	6'0"	7'0"	1-3/4"	A/G	STF	NON-RTD	EXTERIOR To/From ENTRY VEST/LOBBY
D02	D02	07.	PR	6'0"	7'0"	1-3/4"	A/G	STF	NON-RTD	ENTRY VEST/LOBBY To/From CENTRAL HALLWAY
D03	D03	05.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	EXTERIOR To/From GRADES 1-2
D04	D04	05.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	EXTERIOR To/From GRADES 3-4
D05	D05	05.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	EXTERIOR To/From LOUNGE
D06	D06	04.	PR	6'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	EXTERIOR To/From ELECTL ENCL
D07	D07	04.	PR	6'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	EXTERIOR To/From STORAGE RM
D08	D08	05.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	EXTERIOR To/From HALLWAY
D09	D09	02.	PR	6'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	EXTERIOR To/From CLASSRM GRADES 7-8
D10	D10	02.	PR	6'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	EXTERIOR To/From CLASSRM GRADES 5-6
D11	D11	08.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	CLASSROOM To/From STAFF ROOM
D12	D12	08.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	ENTRY VEST/LOBBY To/From STAFF ROOM
D13	D13	08.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	CLASSROOM To/From COMPUTER STAFF RM
D14	D14	08.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	LOUNGE AREA To/From COMPUTER STAFF RM
D15	D15	09.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	HALLWAY To/From CLASSROOM

Door Schedule

Mark	Door No.	HwSet	Mode	Width	Height	Thick	Door	Frame	Rating	Outside / Inside Location Remarks
D16	D16	10.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	HALLWAY To/From MULTI-OCC STU RR
D17	D17	10.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	HALLWAY To/From MULTI-OCC STU RR
D18	D18	11.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	HALLWAY To/From SGL-OCC STU RR
D19	D19	11.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	HALLWAY To/From SGL-OCC STU RR
D20	D20	12.	PR	5'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	CLASSROOM To/From STORAGE CLOSET
D21	D21	15.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	LOUNGE To/From JANITOR
D22	D22	11.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	LOUNGE To/From SGL-OCC STAFF RR
D23	D23	11.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	LOUNGE To/From SGL-OCC STAFF RR
D24	D24	13.	PR	3'8"	7'0"	1-3/4"	HMD	HMF	NON-RTD	LOUNGE To/From STORAGE CLOSET
D25	D25	08.	SGL	3'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	LOUNGE AREA To/From STORAGE RM
D26	D26	16.	PR	6'0"	7'0"	1-3/4"	HMD	HMF	NON-RTD	STORAGE RM To/From ELECTL CLOSET
D27	D27	17.	PR	3'0"	7'0"	1-3/4"			NON-RTD	CLASSROOM To/From FLDG DR PANEL STG
D28	D28	17.	PR	3'0"	7'0"	1-3/4"			NON-RTD	CLASSROOM To/From FLDG DR PANEL STG
D29	D29	17.	PR	3'0"	7'0"	1-3/4"			NON-RTD	CLASSROOM To/From FLDG DR PANEL STG
D30	D30	17.	PR	3'0"	7'0"	1-3/4"			NON-RTD	CLASSROOM To/From FLDG DR PANEL STG

Door Schedule

Mark	Door No.	HwSet	Mode	Width	Height	Thick	Door	Frame	Rating	Outside / Inside Location Remarks
D31	D31	17.	PR	3'0"	7'0"	1-3/4"			NON-RTD	CLASSROOM To/From FLDG DR PANEL STG
D32	D32	17.	PR	3'0"	7'0"	1-3/4"			NON-RTD	CLASSROOM To/From FLDG DR PANEL STG
D33	D33	18.	FLD						NON-RTD	CLASSROOM
D34	D34	18.	FLD						NON-RTD	CLASSROOM
D35	D35	18.	FLD						NON-RTD	CLASSROOM
D36	D36	18.	FLD						NON-RTD	CLASSROOM
G-01.	G-01.	G-ROLL	SL				STL	STL	NON-RTD	STREET To/From PARKING
G-02.	G-02.	G-ROLL	SL				STL	STL	NON-RTD	STREET To/From PARKING
G-03.	G-03.	G-PH	SGL				STL	STL	NON-RTD	STREET To/From ENTRY COURT
G-04.	G-04.	G-PH	SGL				CLG	CLF	NON-RTD	STREET / PUBLIC WAY To/From PLAY YARD
G-05.	G-05.	G-UTIL					CLG	CLF	NON-RTD	STREET / PUBLIC WAY To/From PLAY YARD
G-06.	G-06.	G-UTIL					STL	STL	NON-RTD	STREET / PUBLIC WAY To/From SERVICE AREA
G-07.	G-07.	G-PH	SGL				STL	STL	NON-RTD	ENTRY COURT To/From PLAY YARD
G-08.	G-08.	G-UTIL					STL	STL	NON-RTD	STREET / PUBLIC WAY To/From SERVICE AREA

SECTION 08 8000

GLAZING

PART 1 - GENERAL

1.01. SUMMARY

A. Section Includes:

1. Glass and glazing as indicated.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 08 4112 - Aluminum Entrances and Storefronts.
3. Section 08 5113 - Aluminum Windows.
4. Section 08 7100 - Door Hardware.

1.02. SUBMITTALS

A. Product Data: Submit manufacturer's descriptive literature and installation recommendations for glass, glazing, and accessories.

B. Material Samples: Submit 6-inch square units of each type of glass specified.

1.03. QUALITY ASSURANCE

A. Labeling: Label each piece of glass and glazing and mirrors with manufacturer's name, and the grade or quality of the material. Labels shall be intact before and after installation. Fire-protection-rated glazing shall bear a label or other identification in accordance to the CBC.

B. Comply with the following as a minimum requirement:

1. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
2. ASTM C1036 - Standard Specification for Flat Glass.
3. ASTM C1048 - Standard Specification For Heat-Strengthened and Fully Tempered Flat Glass.
4. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.

- 5. CPSC 16 CFR 1201 - Safety Standards for Architectural Glazing Materials issued by the Consumer Products Safety Commission.
 - 6. ANSI Z97.1 – Safety Glazing Materials Used in Buildings.
 - 7. GANA - Glazing Manual.
- C. Qualifications of Installer: Minimum five years experience installing glass in projects of similar scope and complexity.

1.04. DELIVERY, STORAGE AND HANDLING

- A. Deliver glass and glazing materials with manufacturer's labels intact.
- B. Do not remove labels until glass has been installed and inspected by the Project Inspector.
- C. Protect glass from staining, marking, and damage.
- D. Putty and glazing compound shall be delivered to the Project site in manufacturer's original unbroken containers labeled to identify contents.

1.05. PROJECT CONDITIONS

- A. Perform glazing when ambient temperature is above 40 degrees F.
- B. Perform glazing on clean, dry surfaces only.

1.06. WARRANTY

- A. Manufacturer shall provide a five year material warranty.
- B. Manufacturer shall provide a five year material warranty for coatings and thermally or acoustically rated insulation units against deterioration in acoustic or thermal rating.
- C. Installer shall provide a three year fabrications and installation warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS AND FABRICATORS

- A. To maximum extent possible, provide domestically manufactured and fabricated glass, and provide glass from one manufacturer.
- B. Types of glass specified or indicated shall be manufactured or fabricated by one of the following:

1. Pilkington LOF (fire rated glazing).
2. PPG Glass Technology.
3. Visteon Float Glass Operations.
4. Viracon.
5. Southwest Technologies.
6. Equal.

2.02 GLASS MATERIALS

- A. General: Conform to ASTM C1036, ASTM C1048, ASTM C1172 and to ANSI Z97.1. Label factory cut panes.
- B. Float Glass: Type I, (transparent glass flat), Class 1 (clear), Quality q3, (glazing select), minimum 1/4 inch thickness unless otherwise indicated or required.
- C. Tinted Float Glass: Type I (transparent glass), Class 2 (tinted heat absorbing and light reducing), quality q3 (glazing select), manufactured by PPG or LOF, color as selected by Architect, minimum 1/4 inch thickness unless otherwise indicated or required.
- D. Tempered Glass: Condition A (uncoated surfaces), Type I or II, Class 1, Quality q3 (glazing select), Kind FT (fully tempered glass), match color of clear or tinted glass as applicable; fully thermal tempered, heat strengthening or chemical tempering is not permitted. Perform tempering by horizontal oscillating roller hearth or high speed roller hearth process. Do not permit fabrication processes leaving gripper or tong marks. Handle and size glass according to manufacturer's written instructions.
- E. Clear Laminated Glass: Two layers of 1/8 inch clear float glass with 0.030 inch thick high strength polyvinyl butyral laminating sheet.
- F. Tinted Laminated Glass: One layer of 1/8 inch clear float glass and one layer of tinted glass to match other windows, with 0.030 inch thick high strength polyvinyl butyral laminating sheet. Edges of laminated glass shall be treated with Argotec, Argo Edge Seal Plus, or equal, edge protection to prevent contact of laminating sheet with sealants.
- G. Low Emissivity Glass (Low E Glass): Provide units with thin metallic high-transmittance coating applied to the number 3 surface of the unit, unless otherwise indicated. The U-value for the IGU shall be no greater than 0.34, unless otherwise indicated.

- H. Wire Glass: Type II (patterned and wired glass, flat), Class 1 (clear glass), Quality q8 (glazing), Category II, Form 1 (wired, polished both sides), mesh m2 (square). Wire glass for fire rated openings shall bear an identifying UL label or the label of a recognized testing agency and shall be installed in a steel fire rated window frame assembly in compliance with CBC section 715.5. Wire glass shall be provided with fire-rated safety film meeting CPSC 16 CFR Part 1201, Category II for impact safety; Superlite I-W, or equal. Safety film shall be installed on interior side of glass. Wire Glass Category I is not acceptable.
- I. Obscure Glass: Type II (patterned), Class 1 (clear), Form 3 (patterned), Quality q7 (decorative), patterned one side, pattern as indicated or selected.
- J. Unframed Mirrors: Category II safety backed mirror-quality float glass, ¼ inch thick, , edges finished and polished, double silvered with electro-deposited copper coating plus an organic protective coating, equal to Palmer Products Mirro-Bac Paint. Include polished stainless steel edge channels at top and bottom edges, plus mirror adhesive bonding to wall.
- K. Framed Mirrors: Fabricated of one-piece Type 304 stainless steel angle frame, ¾ inch by ¾ inch, with continuous integral stiffener on sides and beveled front to hold frame tightly against mirror. Corners shall be heliarc welded, ground and polished smooth. Exposed surfaces shall have stain finish with vertical grain. Mirror shall be fabricated of 1/4 inch Category II safety backed mirror quality float glass, free from tong marks. Edges shall be protected by plastic filler strips. Full-size, shock-absorbing, water-resisting, non-abrasive 1/8 inch thick polyethylene padding shall protect backs of mirrors. Mirrors shall be provided with 24 gage galvanized steel back with integral hanging brackets for mounting on concealed, rectangular wall hangers, and shall be secured with concealed Phillips head locking screws on bottom of frame.
- L. Thermoplastic Glazing: Polycarbonate sheet shall be ultra-violet stabilized material, clear or glare reducing as indicated, 1/4 inch thick as manufactured by General Electric Company “Lexan”, DuPont, or equal. Glare reducing glazing shall be gray in color, providing a light transmission of 14 percent.

2.03 GLASS SETTING MATERIALS

- A. Glazing materials and accessories shall be fully compatible with the materials and finishes with which they are in contact.
- B. Setting Blocks: ASTM C864, channel shape; having ¼ inch internal depth, Shore A hardness of 80 to 90 Durometer. Blocks shall be a minimum 2 inch long. Block width shall be approximately 1/16 inch less than the full width of the rabbet. Block thickness shall be at least 3/16 inch, sized for rabbet depth as required.

- C. Spacers: ASTM C864, channel shape, with ¼ inch internal depth, 3/32 inch flanges, eb, 1/8 inch thick, one to 3 inches long. Spacers shall provide Shore A hardness of 40 to 50 Durometer.
- D. Vinyl Glazing Channels: Profile compatible with framing system and designed to accommodate glass of specified thickness, light gray in color. Provide for dry glazing aluminum frames where indicated or permitted.
- E. Glazing Tape: Poly-isobutylene based sealant tape, conforming to AAMA 804.1, with adhesive one side protected by temporary paper cover, Extru-Seal manufactured by Pecora Corp., No. 303 by Protective Treatments, Inc., or equal.
- F. Spring Steel Spacers: Galvanized steel wire or strip designed to position glazing in channel or rabbet sash with stops.
- G. Glazing Clips: Galvanized steel spring wire designed to hold glass in position in rabbet sash without stops.
- H. Glazing Points (Sprigs): Pure zinc stock, thin, flat, triangular or diamond-shaped pieces, 1/4 inch minimum size.
- I. Glazing Sealants for Metal Sash: GE Silicones Silglaze II 2800, GE Silicones Silpruf, GE Silicones 1200 Silicone, and Dow Corning 999A. Polybutylene, oleoresinous, asphalt, and oil base sealants are not permitted. Provide sealant of same color as structural silicone sealant unless otherwise required.
- J. Glazing Compound for Wood Sash: Provide acrylic latex glazing compound for bedding and sealing glass in wood frames
- K. Glazing Compounds and Sealants for Thermoplastic: Provide silicone, butyl, or polysulfide glazing compound.
- L. Mirror Setting Materials: Manufactured by Palmer Products Corporation, or equal, for installation of mirrors, and as follows:
 - 1. Mirror backing paint: Mirro-Bac Paint, or equal, formulated to protect mirror silvering.
 - 2. Mirror bond coat: Mirro-Mastic Bond, or equal, formulated to isolate deleterious backing materials from mastic and mirror.
 - 3. Mirror mastic: Palmers Super Set Mirro-Mastic PM290.

2.04

SPEAK HOLES

- A. Speak holes shall be stock No. 444, 4 to 6-inch diameter for 1/4-inch tempered float glass, stainless steel as manufactured by Nissen and Co., N666 by C.R. Laurence Co., or equal.

PART 3 - EXECUTION

3.01 TOLERANCES

- A. Thickness indicated or specified are nominal within standard tolerances. Maximum size of vertical panes shall not exceed the following:

Float Thickness: inch	1/8 inch	3/16 inch	1/4
Maximum Areas in Square Feet:	9	16	20

When exceeding these square foot measurements glass is to be safety glazed.

3.02 INSTALLATION, GENERAL

- A. Glazed cabinet doors, windows, transoms, and fixtures, not otherwise noted or indicated, shall be glazed with clear float glass. Room or entrance doors shall be glazed with clear wire glass with impact film.
- B. Obscure glass in exterior openings shall be installed with smooth side of glass to weather. Patterned glass shall be installed with pattern running vertically, unless otherwise indicated.
- C. Glazing tapes or sealants shall be installed wherever glass contacts wood or metal surfaces. Width of strips shall be as required.
- D. Glazing compound shall be neatly and cleanly installed in straight lines, even with inside edge of sash members. Thumb puttying is not permitted.
- E. Display Cases and Sliding Glass Doors in Casework: Glass in display cases shall be 1/4 inch clear laminated glass as indicated. Edges of glass shall be rounded and polished.
- F. Glazing Aluminum Sash: Glazing material in aluminum sash shall be installed in compound and secured in place with aluminum glazing beads. In addition, horizontal beads shall be installed with 6-inch by 1 inch, type A, self-tapping, stainless steel, Phillips-head screws, installed into pre-drilled, counter-sunk holes and spaced 2 inches from each end and 9 inches on centers.
- G. Speak holes shall be installed according to glass manufacturer's written recommendations.

3.03 INSTALLATION OF GLASS

- A. Conform to requirements of GANA Glazing Manual.
- B. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.
- C. Provide compressible filler rods or equivalent back-up material to prevent sealant from extruding into glass channel weep systems, from adhering to back surface of joints and to control depth of sealant for optimum performance.
- D. Force sealants into glazing channels, in manner to eliminate voids and to ensure complete bond of sealant to glass and channel surfaces.
- E. Tool exposed surfaces of sealants to provide for drainage away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel to eliminate dirt and moisture pockets.
- F. Where dry glazing of aluminum frame is indicated or permitted, provide vinyl glazing channels installed in accordance with frame manufacturers written recommendations. Do not stretch channels. Miter corners.
- G. For tape glazing, furnish tape of thickness to provide approximately 30 percent compression. Cut tape to proper length and install to permanent stops, the entire length of the head and sill first, then to jambs. Butt tape together with no overlap and remove paper backing. Install glass on setting blocks at quarter points and maintain uniform glass edge clearance around entire perimeter of glass. Maintain manufacturer's recommended edge clearance and bite on glass. Install glass firmly into tape with a slight lateral movement to assure proper adhesion. Install tape to removable stop with evenly distributed firmness, smoothing out wrinkles in tape. Secure removable stop in proper position so tape makes contact with glass as stop is installed, forcing contact with glass and completely sealing joint. Remove excess tape from both sides at slight angle oversight line. Do not undercut.
- H. Glass in Wood Frames: Install glass with glazing points and setting blocks as required. Seal glass with glazing compound and secure with wood stops. Install stops with fine finishing nails and set for putty stopping.
- I. Patterned Glass: Install glass with one patterned smooth surface on the weather side.
- J. Wire Glass: Install glass for fire doors in accordance with installation requirements of NFPA 80.
- K. Laminated Glass: Sashes, which are to receive laminated glass, shall be weeped to the outside to permit water in the channel to drain from the frame.

- L. Unframed Mirrors: Walls shall be clean, dry, plumb, rigid and smooth. Install mirror backing paint to back of mirror and to edges. Install mirror bond coat over painted backing, wood backing, concrete and masonry to receive mirrors. Bond coat is not required over vitreous surfaces. Install sufficient mirror mastic coverage when mirror is installed. Mirror mastic will be applied 4 inches from edge and at a maximum of every 12 inches at the size of a golf ball. Install mirror into place, providing 3/16 inch clearance between mirror and substrate. Support mirrors with temporary edge channels to allow mastic set-up and provide permanent top and bottom edge channels.
- M. Framed Mirrors: Walls shall be clean, dry, plumb, rigid and smooth. Install mirrors with concealed mounting devices, and secure with concealed screws on bottom of mirror. Conform to manufacturers written recommendations.

3.04 PROTECTION AND CLEANING

- A. Protect exterior glass from breakage by furnishing crossed streamers attached to framing and away from glass surface. Do not directly install markers to glass surfaces. Remove non-permanent 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. Glazing, which cannot be cleaned to a required condition, shall be deemed defective Work.
- D. Remove and replace glass, which is broken, chipped, cracked, abraded, or damaged during construction.
- E. Remove protective covering from thermoplastic not more than 4 days before Substantial Completion, and immediately before cleaning. Methods of final cleaning and finishing shall be as prescribed by thermoplastic glazing publications referenced above.
- F. Wash glass on both faces not more than four days before Substantial Completion. Wash glass by method recommended by glass manufacturer. Do not furnish harsh cleaning agents, caustics, abrasives, or acids for cleaning. Polish glass both sides and leave free of soil, streaks, and labels.

3.05 CLEAN UP

210519

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.06 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 08 8053
SECURITY GLAZING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Security glass as indicated.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 08 4112 - Aluminum Entrances and Storefronts.
3. Section 08 4413 – Glazed Aluminum Curtain Walls.
4. Section 08 5113 - Aluminum Windows.
5. Section 08 8000 – Glazing.
6. Section 08 8716 - Anti-Graffiti and Impact Control Films.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's descriptive literature and installation recommendations for glass, glazing, and accessories.
- B. Material Samples: Submit 6-inch square units of each type of glass specified.
- C. Test Reports: From accredited laboratory attesting proposed product passed ballistic impact, concentrated assault and forced entry requirements of UL 972.

1.03 QUALITY ASSURANCE

- A. Labeling: Label each piece of glass and glazing with manufacturer's name, and the grade or quality of the material. Labels shall be intact before and after installation.
- B. Comply with the following as a minimum requirement:
 1. American National Standards Institute (ANSI):

- a. ANSI Z97.1 For Safety Materials Used in Buildings – Safety Performance Specifications and Methods of Test
- 2. ASTM International:
 - a. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
 - b. ASTM C1036 - Standard Specification for Flat Glass.
 - c. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass.
 - d. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.
- 3. Glass Association of North America (GANA):
 - a. GANA - Glazing Manual.
 - b. GANA – Sealant Manual.
- 4. Consumer Safety Product Commission (CSPC):
 - a. CPSC 16 CFR 1201 - Safety Standards for Architectural Glazing Materials issued by the Consumer Products Safety Commission.
- 5. Underwriters Laboratories (UL):
 - a. UL 972 – Standard for Burglary Resisting Glazing Material.
- C. Qualifications of Installer: Minimum five-year experience installing glass in projects of similar scope and complexity.
- D. Sealants, adhesives and primer shall be approved by the OWNER’s Office of Environmental Health and Safety (OEHS).

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver glass and glazing materials in their original unopened containers and with manufacturer's labels intact.
- B. Store materials in safe and dry locations and do not unpack until installation.
- C. Do not remove labels until glass has been installed and inspected by the Project Inspector.

- D. Protect glass from staining, marking, and damage.

1.05 PROJECT CONDITIONS

- A. Perform glazing when ambient temperature is above 40 degrees F.
- B. Perform glazing on clean, dry surfaces only.

1.06 WARRANTY

- A. Laminated Glass: Ten year against delamination and discoloration.
- B. Insulating Glass Units: Ten years warranty against delamination and failure of seals, and material obstruction of vision as a result of dust, moisture or film formation on internal glass surfaces.
- C. Installer shall provide a three-year fabrications and installation warranty.

PART 2 – PRODUCTS

2.01 SINGLE GLAZING

- A. Glass with 090 Interlayer:
 - 1. Laminated glass consisting of outer layers of glass with a 0.090” polyvinyl buteral (PVB) interlayer.
 - 2. Nominal Minimum Thickness: 3/8” minimum.

2.03 GLASS SETTING MATERIALS

- A. For glass and glass setting materials refer to Section 08 8000 Glazing.
- B. Glazing sealants shall be Dow 795. No other sealants shall be used without specific instruction from the manufacturer and the OWNER. Provide sealant of same color as structural silicone sealant unless otherwise required.

2.04 IMPACT CONTROL FILM

- A. Per Section 08 8716 - Anti-Graffiti and Impact Control Films; 7 mil thick.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

210818

- A. Install security glazing in conformance to Section 08 8000 Gazing, except Dow 795 sealant shall be used.
- B. Install anti-graffiti control film on exterior surface of glass in accordance with Section 08 8716, Anti-Graffiti and Impact Control Films.

3.02 CLEAN UP

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.03 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 08 8716

ANTI-GRAFFITI CONTROL FILM

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Anti-graffiti control film applied to glazing.
- B. Related Requirements:
 - 1. Division 01 – General Requirements.

1.02 RELATED REQUIREMENTS

- A. ASTM D882 – Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- B. ASTM D1044 – Standard Test Method for Resistance of Transparent Plastics to Surface Abrasion.
- C. ASTM D4830 -- Standard Test Methods for Characterizing Thermoplastic Fabrics Used in Roofing and Waterproofing.
- D. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. ASTM E903 - Effect of Coating Variables on Total Solar Reflectance and Emissivity of Polymer Coated Metal Panels.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications, catalog cuts, and other data to demonstrate compliance with the specified requirements.
- B. Material Samples: Submit Samples of film installed on glass; minimum Sample size 8 by 11.
- C. Quality Control Submittals:
 - 1. Certificates: Manufacturer's certification that the installer has been trained for the installation of the specified films.
 - 2. Installers Qualifications: Submit list of installations completed within the past three years; provide owners contact information.

- 3. Manufacturer's installation instructions.
- D. Closeout Submittals: Maintenance, cleaning and replacement instructions.
- 1.04 QUALITY ASSURANCE
 - A. Manufacturer Qualifications: Manufacturer shall have been engaged in the fabrication of anti-graffiti control films for a minimum of five years.
 - B. Installer Qualifications: Installer shall be trained by the film manufacturer and have been regularly engaged in the installation of such film for at least three years.
- 1.05 DELIVERY, STORAGE AND HANDLING
 - A. Deliver materials to the Project site with manufacturer's labels intact and legible.
 - B. Protect film from damage.
- 1.06 SITE CONDITIONS
 - A. Maintain temperature, humidity and ventilation within limits recommended by film manufacturer.
- 1.07 WARRANTY
 - A. Manufacturer shall provide a one year material warranty for products installed outdoors, and a 15 year warranty for products installed indoors.

PART 2 - PRODUCTS

- 2.01 MANUFACTURERS
 - A. Provide products manufactured by one of the following:
 - 1. 3M.
 - 2. CPFilms Inc., LLumar Films.
 - 3. Huper Optik USA.
 - 4. Equal.
- 2.02 PHYSICAL AND MECHANICAL PROPERTIES
 - A. Film Thickness:
 - 1. 4 mils.
 - B. Scratch Resistance: Film shall have 5 percent maximum haze increase when tested to ASTM D1044.

- C. Surface Burning Characteristics: When tested in accordance to ASTM E84 shall not exceed the following values:
 - 1. Flame spread index: 25 maximum.
 - 2. Smoke Development Index: 450 maximum.
- D. Puncture Strength when tested per ASTM D4830: .Minimum of 79 pounds for the 4 mil film and 110 for the 6 mils.
- E. Physical Properties when film is applied on a 1/8 inch clear glass and tested in accordance to ASTM E903:
 - 1. Shading Coefficient: 0.97 for the 4 mils films and 0.95 for 6 mils.
 - 2. Visible Light Transmission: 86 to 89 percent.
 - 3. Solar Transmission: 81 percent for 4 mils and 79 percent for 6 mils.
 - 4. Solar Absorption: 10 percent for 4 mils and 13 percent for 6 mils.
 - 5. Solar Reflection: 9 percent for 4 mils and 8 percent for 6 mils.
 - 6. UV Transmission: Less than 5 percent.
- F. Tensile properties when tested in accordance to ASTM D882:
 - 1. Minimum Tensile Strength of Film: 30,000 pounds per square inch.
 - 2. Minimum Elongation at Break: 100 percent.
 - 3. Minimum Break Strength: 130 pounds per inch.

2.03 ACCESSORIES

- A. Provide accessories, such as adhesive, sealants and cleaners, primers and sealers as recommended by film manufacturer and compatible for application indicated and surfaces in contact.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine glass surfaces to receive film and verify that they are free from defects and imperfections, which will affect installation. Correct such deficiencies before starting film installation.

3.02 PREPARATION

- A. Window frames shall be checked for dirt, dust, and other debris. Frames shall be cleaned and vacuumed. Window surfaces shall be cleaned with a commercial cleaner recommended by manufacturer.
- B. Window surfaces to receive anti-graffiti control film shall be bladed with one sided razor blade with blade holder for the purpose of removing particulate matter on glass surface.
- C. Protect window frame from damage generated by film application.

3.03 INSTALLATION

- A. Film shall be installed in strict accordance with manufacturer's written instructions.
- B. After final squeegee technique, film shall be flat with no visible concentrations of moisture.
- C. Film edges shall be cut neatly and square at a uniform distance of 1/8 inch maximum of the window sealing device.
- D. Installed film shall be free of any creases or tears once installed to designated interior window surfaces.
- E. Treated interior film surface shall be clean and free of soap residue and squeegee marks.
- F. If film has a dimpled appearance from residual moisture, moisture shall dry flat with no moisture dimples within a 30 day period after the date of Substantial Completion.

3.04 CLEANING

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.05 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 0561

MOISTURE TESTING FOR FLOORING INSTALLATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Moisture, alkali and bond testing of existing and new concrete slabs on grade and elevated slabs scheduled to receive adhered flooring.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 3000: Cast-in-Place Concrete; concrete slab curing.
3. Division 09 Finishes: Flooring Sections.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM D7234 – Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
2. ASTM F710 – Practice for Preparing Concrete Floors to Receive Resilient Flooring.
3. ASTM F1869 – Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
4. ASTM F2170 – Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.

1.03 TESTING REQUIREMENTS

A. Perform the following tests:

1. At new and existing concrete slabs on grade and below grade:
 - a. Moisture Vapor Emission Rate testing per ASTM F1869.
 - b. Relative Humidity testing per ASTM F2170.

- c. pH testing per ASTM F710.
 - d. Bond testing per D7234 or manufacturer recommendations.
- 2. At new and existing lightweight concrete elevated slabs:
 - a. Relative Humidity testing per ASTM F2170.
 - b. pH testing per ASTM F710.
 - c. Bond testing per D7234 or manufacturer recommendations.
- 3. At new normal weight concrete elevated slabs:
 - a. Moisture Vapor Emission testing per ASTM F1869.
 - b. Relative Humidity testing per ASTM F2170.
 - c. pH testing per ASTM F710.
 - d. Bond testing per D7234 or manufacturer recommendations.

1.04 SUBMITTALS

- A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; indicating:
 - 1. Moisture, humidity and pH limits.
 - 2. Manufacturer's bond/compatibility test procedure.
- B. Test Report: Submit on chart form with small scale floor plans showing the location of each test performed.
 - 1. Submit report for relative humidity test in accordance to ASTM F2170. Include pH, moisture vapor emission, and adhesion test results.
 - 2. Indicate areas where the test results exceed the floor covering manufacturer's limits and indicate proposed remediation procedures.

1.05 QUALITY ASSURANCE

- A. Tests indicated in this Section shall be performed by CONTRACTOR or a qualified independent testing agency retained and paid by CONTRACTOR. OWNER may perform testing at its own expense to compare to CONTRACTOR's test results.

B. Testing kits:

1. Moisture-Vapor Emission: Prepackaged anhydrous calcium chloride test kits conforming to requirements of ASTM F-1869.
2. Alkalinity: Calibrated digital pH meter in accordance with ASTM F-710.
3. Relative Humidity: Relative humidity concrete moisture testing equipment conforming to ASTM F-2170.

1.06 ENVIRONMENTAL CONDITIONS

- A. Project areas to be tested shall be at the same temperature and humidity expected during normal use. These temperature and humidity levels shall be maintained for 48 hours prior to, and during the testing. If this is not possible, temperature and relative humidity ranges shall be within ranges indicated in the applicable ASTM test method.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 PREPARATION

- A. Testing shall take place after allowing concrete to dry for a minimum of 90 days.
- B. Prior to test placement, CONTRACTOR shall clean concrete slabs and have them free of foreign substances, such as residual adhesives, curing or hardening compounds, adhesive removers, sealers, paints and other foreign materials that might prevent adhesive bond. These materials shall be removed not less than 24 hours prior to the placement of the test kits. Testing when floor coverings have never been installed may waive the 24 hour wait period.
- C. The test site temperature and humidity shall be in conformance to Article “Environmental Conditions”.
- D. Minimum number of tests: For Moisture Vapor Emission Rate, Relative Humidity and pH testing, provide three for the first 1,000 square feet of floor area, and at least one for each additional 1,000 square feet or fraction thereof.

3.02 MOISTURE VAPOR EMISSION TESTING (MVEP)

- A. MVEP testing shall be performed in accordance to ASTM F1869.

- B. Unless more stringent requirements are recommended by flooring manufacturer, the maximum allowable moisture release at time of flooring installation shall be three pounds per 24 hours per 1,000 square feet.
- C. Weigh test dish on site prior to start of test. Scale must report weight to 0.1 grams. Record weight and start time. Expose Calcium Chloride and set dish on concrete surface. Install test containment dome and allow test to proceed for 60 – 72 hours.
- D. Retrieve the test dish by carefully cutting through containment dome. Close and reseal test dish. Weigh test dish on site recording weight and stop time. Calculate and report results as "pounds of emission per 1,000 sq. ft. per 24 hours".
- E. In the event the MVEP value exceeds the value specified in this Article and the flooring manufacturer recommended limits, CONTRACTOR shall propose remediation to OWNER. In new concrete slab construction, remediation shall be at no cost to OWNER.

3.03 RELATIVE HUMMIDITY TESTING

- A. Relative humidity testing shall be performed in conformance to ASTM F2170.
- B. Choose test areas where high moisture levels are suspected. Holes in new concrete slabs may be cast or drilled. Depth of holes shall be 40% of slab thickness for slabs drying only from the top, and 20% when drying from top and bottom, as indicated on ASTM F2170. Determine the concrete thickness of each type of slab to be tested and calculate depth of holes.
 - 1. Hole shall be drilled dry; do not use water for cooling or lubrication. Drill holes in the concrete and insert test liners. Hole shall not be more than 0.04 inches, or one millimeter, larger than the test liner.
 - 2. Before placing concrete, secure liner tube to formwork or steel reinforcing to avoid displacement during concrete placement, consolidation and finishing. Secure a solid rod into the liner and protruding slightly above the top of the liner to exclude fresh concrete from entering the liner.
- C. Clean the area around the hole with a vacuum cleaner and vacuum the dust out of the hole. Immediately, set the sleeve by tapping the sleeve into the hole with a hammer or mallet.
- D. Remove the sleeve plug and place probe into the sleeve assuring that it reaches the bottom of the test hole. Connect the probe lead wire to the meter, and turn meter on. Allow time for the probe to sit in the test sleeve to achieve moisture equilibrium before taking relative humidity readings. Probe shall be at the same temperature as the concrete before the reading. Check for drift and follow meter manufacturer recommendations.

- E. Record the relative humidity to the nearest percent and temperature to the nearest degree. Record location of hole within the structure and depth of probe. Use the relative humidity probe to measure the ambient air temperature and relative humidity above the slab in the vicinity of the test location. Remove the liner and fill the hole with a cementitious patching compound.
- F. In the event the relative humidity exceeds 75% and the flooring manufacturer recommended limits, CONTRACTOR shall propose remediation to OWNER. In new concrete slab construction, remediation shall be at no cost to OWNER.

3.04 PH LEVEL TESTING

- A. Perform testing in accordance to ASTM F710, and at the same time as the vapor emission and relative humidity tests.
- B. Place several drops of water onto the concrete surface to form a puddle approximately 1” in diameter. Allow the water to set for 60 +/- 5 seconds. Dip the pH paper into the water and remove immediately, compare color to chart provided by paper supplier to determine pH reading. Record and report results.
- C. When using pH Pencil and pH Meters, follow the instrument manufacturer’s instructions.
- D. The surface of the concrete should have a pH of 9 or less. In the event the pH exceeds this value and the flooring manufacturer recommended pH limits, CONTRACTOR shall propose remediation to OWNER. In new concrete slab construction, remediation shall be at no cost to OWNER.

3.05 BOND TEST

- A. Perform bond testing in accordance to ASTM D4541 or per manufacturer’s recommendations.
- B. Select appropriate locations for the bond tests such as near walls or in light traffic areas. Spaced test samples approximately 50 feet apart throughout the designated installation area. Number of tests will be as determined by the recommended spacing of 50 feet.
- C. Use the flooring material and recommended adhesives. Install 3' x 3' panels using the exact techniques that will be used for the flooring installation. It is recommended that tests be spaced approximately 50 feet apart throughout the designated installation area. Tape edges of panels to prevent edge drying of adhesive. Protect test panel from traffic.
- D. After 72 hours of placing the flooring, remove tape and observe whether it is bonded tightly to the floor, by trying to lift the edges with a scraper or other means, or pull flooring from the subfloor by hand. Determine if bonding is suitable for flooring installation.

- E. At locations where membrane, primer, leveler or patch are applied, perform applicable bond testing recommended by flooring manufacturer to assure adequate bondage of flooring to substrate.
- F. Success or failure shall be determined by visual interpretation and the amount of physical effort required to remove the floor covering. If the flooring material can be removed it will indicate failure of the bond test. If the flooring requires a great deal of effort to pull it up, the bond test can be considered successful, providing no sign of moisture is found. In the event that bond failure occurs in new concrete slab construction, remediation shall be at no cost to OWNER.

3.05 CLEAN UP

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.06 PROTECTION

- A. Protect the Work of this section until installation of finish flooring.

END OF SECTION

SECTION 09 2216

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Non-structural metal framing.
2. Slotted system for positive attachment of metal studs to fluted steel decks for head of wall expansion joint movement (cyclic).

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 09 2423 - Cement Plaster and Metal Lath.
3. Section 09 2900 - Gypsum Board.

1.02 PROJECT REQUIREMENTS

A. Regulatory Requirements: Comply with DSA and CBC requirements.

B. Design Requirements:

1. Metal Studs: Studs for interior partitions shall be roll-formed channel or C-shapes.
2. Track: Stud track for floor and ceiling anchorage shall be channel configuration, sized to fit studs. Galvanized steel as manufactured for installation with specified metal studs.
3. Design: Design is based on minimum 5 pounds per square foot load applied perpendicular to walls. Deflection shall not exceed 1/240 under design load.

1.03 SUBMITTALS

- ###### A. Shop Drawings: Submit drawings showing framing, connection details, accessories and anchorage. Indicate location of assemblies and size and spacing of framing components.

- B. Product Data: Submit manufacturer's catalog data for each item proposed for installation.
- C. Certificates: Furnish manufacturer's certification that materials meet or exceed Specification requirements.

1.04 DEFINITIONS

- A. Cyclic Anchoring Method: A system which provides for positive attachment (as described in ASTM C754) of studs to upper track, and of track to overhead fluted deck, while permitting up to 1-inch of vertical movement.
- B. System: The application of the above products in their entirety as tested. There can be no intermixing of components unless specifically outlined in the appropriate test reports.

1.05 QUALITY ASSURANCE

- A. Coordinate with related Work to provide blocking for items mounted on finished surfaces and to provide allowances for pipes and other items inside partitions and walls.
- B. Comply with following as a minimum requirement:
 - 1. American Welding Society (AWS): Structural Welding Code Steel (D1.1); and Structural Welding Code Sheet Steel (D1.3).
 - 2. ASTM Standards:
 - a. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
 - b. ASTM A1003 –Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members.
 - c. ASTM A641 – Standard Specification for Zinc Coated (Galvanized) Carbon Steel Wire.
 - d. ASTM C645 – Standard Specification for Non-Structural Steel Framing Members.
 - e. ASTM C955 – Standard Specification for Load Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging, for Screw Application of Gypsum Panel Products and Metal Plaster Bases.

- f. ASTM C954 – Standard Specification for Steel Drill Screws for Application of Gypsum Panel Products or Metal Bases to Steel Studs From 0.033 Inch to 0.112 Inch in Thickness.
 - g. ASTM E1190 – Standard Test Methods for Strength of Power-Actuated Fasteners Installed in Structural Members.
- C. Tolerances: Install walls and partitions on straight lines, plumb, free of twists or other defects, and contacting a 10 foot straightedge for its entire length at any location within a 1/8 inch tolerance. Install horizontal framing level within a tolerance of 1/8 inch in 12 feet in any direction.
 - D. Manufacturers shall be members of Steel Stud Manufacturers Association (SSMA).

1.06 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered in their original unopened packages and stored protected from damage. Do not store material directly on grade. Provide adequate support to prevent bowing of material prior to installation.
- B. Store welding electrodes in accordance with AWS D12.1.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Non-structural metal framing:
 - 1. Clark Western Building Systems, Inc.
 - 2. Dietrich Industries, Inc.
 - 3. Marino/Ware.
 - 4. Cemco.
 - 5. Equal.
- B. Top Track Systems:
 - 1. Sliptrack System by Dietrich Industries., Inc. or equal. Down-standing legs shall be nominally 2 1/2-inch and shall be provided with 1 1/2-inch slots at 1 inch on center.
 - 2. VertiTrack or VertiClip System by The Steel Network, Inc. or equal. Pre-assembled track with clips installed to match stud spacing. Clips with attached bushing and screws to allow stud movement.

3. System must provide for minimum tested overall movement of 1 inch: ½ inch in each direction.
4. Track shall be provided in standard widths of 4 and 6 inches and in 16, 18, and 20 gage (54, 43, and 33 mil) sheet steel thickness, as required by Project conditions and detailed.

2.02 MATERIALS

A. Light Gage Metal Framing:

1. Metal framing shall be formed from corrosion resistant-steel conforming to requirements of ASTM A653, 33 ksi minimum.
2. Metal framing shall be zinc coated in conformance to requirements of ASTM A924, G60.
3. Metal framing shall be manufactured in conformance to ASTM C645.
4. Install metal framing according to ASTM C1007, Standard Specification for Installation of Load-Bearing (Transverse and Axial) Steel Studs and Related Accessories.

B. Studs: SSMA, ICC-ES ER-4943P, minimum yield 33 ksi, hot-dipped galvanized or electro galvanized sheet steel, G-60, C Stud type, punched web (except tracks and joists), C-shaped, sizes required to conform to details and scheduled wall thicknesses. Studs shall be rolled from new steel sheet and shall not be produced from re-rolled steel. Stud flanges shall not be less than 1 5/16-inch wide; track flanges, not less than 1 ¼-inch wide.

1. Wall Framing and Furring for Plaster and Mortar Beds: Studs and tracks shall be 18 gage (43 mil) minimum, unless otherwise indicated.
2. Wall Framing and Furring for Gypsum Wallboard: Studs and tracks shall be 20 gage (33 mils) minimum, unless otherwise indicated.
3. Load-Bearing Studs: Studs and members thicker than 18 gage (43 mil) shall conform to requirements of Section 05 4100 - Structural Metal Stud Framing.
4. Stud gages indicated on Drawings or specified are the minimum. Where required stud height and/or loads exceed code requirements or manufacturer's recommendations, provide heavier gage studs and/or decrease stud spacing as necessary to conform to code requirements.

C. Suspended and Furred Ceiling Systems and Wall Furring: Suspended ceiling framing system shall support finished ceiling, light fixtures, air diffusers, and

accessories, as required. Suspension system shall provide a maximum deflection of L/240. Carrying channels shall be fabricated from minimum 0.0548 inch thick cold-rolled steel, 1 1/2-inch wide by 7/16 inch deep. Carrying channels for supports under ducts shall be 2 inches in size as specified. Carrying channels shall be fabricated from hot-dip galvanized coated sheet.

1. Plaster Ceilings: Cross furring members shall conform to ASTM C 645, and shall be fabricated from cold-rolled steel, 3/4 inch wide by 7/16 inch deep. Furring members shall be fabricated from hot-dip galvanized coated sheet.
 2. Gypsum Wallboard Ceilings: Furring members shall be fabricated from cold-rolled steel, 7/8 inch by 2 9/16-inch. Furring members shall be fabricated from hot-dip galvanized coated sheet.
- D. Framed Ceilings: Framed ceiling framing system shall support finished ceiling, light fixtures, air diffusers, and accessories, as required. Suspension system shall provide a maximum deflection of L/240.
1. Plaster and Gypsum Wallboard Ceilings: Ceiling joists shall conform to ASTM C645, hot-dip galvanized coated steel, C-shaped, unpunched, 20 gage (30 mil) minimum, unless noted otherwise.
- E. Shaft Wall Framing Members: CH studs and J runners, 20 gage (30 mil) minimum for 2, 4 or 6 inch studs, conforming to ASTM C645, fabricated of steel conforming to ASTM A653, hot-dip galvanized.
- F. Framing Accessories: Provide standard related accessories including floor and ceiling tracks, clips, web stiffeners, anchors, and similar items, of same manufacture as each type of stud specified, and as required for a complete installation.
- G. Splay Wires and Compression Struts: Approved manufacturers acceptable to manufacturer of ceiling grids, gages and types as required by building codes for ceiling types and weights specified.
- H. Wires: Soft-annealed galvanized steel wire, 8 gage for hanger wires and 16 gage for framing unless otherwise specified.
- I. Fasteners: Wafer-head screws, self-drilling type for 20 gage (30 mil) metal and heavier. ASTM C954 self-drilling, self-tapping screws, Type S-12 pan head, 1/2 inch long.
- J. Fire Rated Acoustical Foam Tape: Compressible, closed cell polyvinyl chloride foam with pressure sensitive adhesive, in rolls with protective release liner on non-adhesive face, 6 pounds per cubic foot density, 1 inch wide x not less than 1/4 inch thick, self-extinguishing, UL 94 recognized, Norseal V740FR, manufactured by Norton Performance Plastics Corporation, or equal.

- K. Acoustical Sealant: Permanently resilient type, non-hardening, as specified in Section 07 9200.
- L. Zinc-Rich Paint: Conform to Fed Spec DOD-P-21035A, Z.R.C. "Cold Galvanizing Compound", manufactured by ZRC Products Company, or equal. Provide for touch-up of galvanized surfaces.
- M. Steel Backing Plates: Provide a minimum 4 inch wide by 16 gage (54 mil) steel, or sections of studs and stud track welded or fastened to web of studs, except as otherwise indicated. Apply shop coat of metal primer.
- N. Anchorage Devices Powder Actuated: Minimum 0.177 inch diameter by 1-7/16 inch long fasteners in regular concrete and 0.145 inch diameter by 1 1/8-inch long fasteners in lightweight concrete. Allowable shear and tension values as permitted in ICC ES reports shall be reduced to 80 percent.
- O. Anchorage Devices, Drilled Expansion Anchors: Minimum 3/8 inch diameter with 2-1/4 inch embedment. Allowable shear and tension values as permitted in ICC ES reports shall be reduced to 80 percent.
- P. Top Track System Materials:
 - 1. Forming steel shall be mill certified prime steel:
 - a. For 0.064 inch sections, conform to ASTM A1011, Grade 50 with a minimum yield point of 50,000 psi.
 - b. For 0.048 and 0.036 inch sections, conform to ASTM A1008, Grade C, with a minimum yield point of 33,000 psi.
 - c. Formed steel shall be provided with galvanizing in accordance with ASTM A653 for a Class G90 zinc coating.
 - 2. Fasteners:
 - a. For attachment of steel studs to slotted track or deflection clip, minimum No.8 corrosion resistant by 1/2 inch waferhead screws.
 - b. For attachment of track system to overhead structural element or metal decking, as provided for by the structural details affecting the Work.
 - 3. Sprayed-on Fireproofing
 - a. Sprayed-on fireproofing shall be as specified in Section 07 8116 - Cementitious Fire Proofing.
 - 4. Dry Method.

- a. Dry mineral wool and sealant system shall use only such products as are represented to have been fully tested and approved under UL 2079 and as specified in Section 07 8413 - Penetration Firestopping.
- b. Mineral wool shall be compressed to the degree as used on approval fire and hose stream test.
- c. The system supplier shall provide a measuring device capable of determining compression to determine compliance with required density.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that overhead or concealed Work is completed, tested, inspected, and finished as required before starting Work of this section.

3.02 INSTALLATION

- A. Walls and Partitions:
 1. Fasten floor runners for exterior walls and interior partitions to concrete slab with required power driven fasteners. Spacing of fasteners not to exceed 24 inches on center. Fasten ceiling runners to structure as by top track system manufacturer.
 2. Sound insulated walls and partitions: Embed floor runner tracks in two beads of acoustical sealant or two runs of compressible tape seal. Install top track nested into slotted track system, in same manner for full height of walls. Where wall ends abutting concrete, masonry, or steel set end studs in two beads of acoustical sealant or two tape seals and secure at 4-foot centers vertically.
 3. Space studs not over 16 inch on center unless indicated otherwise. Studs shall be located approximately 2 inches from door frame jambs, abutting partitions and partition corners, except those providing support for door and window openings.
 4. Furnish and install manufacturer's standard floor track. Fasten track to floor by means of 1/4 inch by 1 1/4-inch Star "Dryvin" hammer drive anchors or 3/16 inch by 1 inch round head, "Rawl-Drives" one-piece expansion bolts spaced not to exceed 3 feet, and installed in drilled holes in slab, or to wood joist with nails as indicated. Track may be fastened to concrete floor slabs with, power-driven fasteners.

5. Studs shall be seated squarely in track with stud web and flanges abutting track web, plumbed and securely fastened with sheet metal screws, to flanges or web of both floor and top tracks. Provide 4 screws per stud.
6. Where there is no suspended ceiling, tops of stud walls shall be provided with track and shoes and be fastened as specified for floors. Welding of studs to ceiling track will not be permitted except where bearing studs are installed.
7. Over metal doorframes, install a cut-to-length section of runner track, with flanges slit and web-bent to allow flanges to overlap adjacent vertical studs, and securely fasten to studs. At doorjamb, extend studs continuous to structure above.
8. Bridging, or horizontal bracing of 1 1/2-inch, cold-rolled channels shall be fastened in a manner to prevent stud rotation. Bridging shall be furnished as follows: walls up to 10 feet high, one row at mid-height; walls exceeding 10 feet high, bridging or bracing rows spaced not to exceed 5 feet on center.
9. Wind bracing shall be fastened where indicated on Drawings. Minimum size of strap shall be as indicated on Drawings. Track where strap terminates shall be anchored as indicated on Drawings.

B. Plaster Ceiling Suspension System:

1. Provide horizontal furring in accordance with CBC Section 2507.
2. Hanger Wires:
 - a. Hanger wires for ceilings suspended from wood frame construction shall be installed in accordance per DSA IR 25-1 and 25-4 and shall be fastened with stem lag screws in bottom edge of joists or rafters. Wire shall be looped through hole in stem lag screw and then wrapped twice around it. Stem lag screws shall be "Stanlag Screws" by Stanline, Inc., or equal, of type and penetration as follows:

Type Size	Hanger Wire	Screw Penetration, Minimum
Stanlag #SLS-3	#12 & #10 (0.104 and 0.128 inch diameter)	1 1/4-inch
Stanlag #SLS-375	#9 & #8 (0.144 and 0.160 inch diameter)	1 1/2-inch

- b. Hanger wire shall be wrapped twice around runner channel, drawn up taut, and wrapped twice around itself.
3. Runner channels shall be installed 6 inches maximum from walls, parallel to runners. Splices in runner channels shall be provided at hangers only, by

lapping channels not less than 12 inches and tying channels together at 2 points with a double wrap of tie wire twisted up taut.

4. Ends of runner channels abutting concrete or masonry surfaces shall be 1 ¼-inch clear and shall be tied to wall or partition with ¾ inch channel brackets providing a 4-inch right angle bend secured with two ¼ inch by 1 inch power-driven fasteners. Brackets shall extend from face of surface not less than 8 inches and shall be tied to runner channels at two points with double wrap of tie wire twisted up taut.
5. Securely saddle-tie furring channels to runner channels at each crossing with 16 gage (0.064 inch diameter) tie wire twisted up taut, and with wings left uncut and bent back.

C. Gypsum Wallboard Ceiling Suspension and Framing: Suspended ceiling system framing shall be installed in accordance with ASTM C754, and as follows.

1. Hangers shall be spaced not more than 48 inches along runner channels and 36 inches in other direction or 42 inches in both directions unless otherwise indicated. Locations of hanger wires shall be coordinated with other Work. Hangers at ends of runner channels shall be located not more than 6 inches from walls. Hanger wire shall be fastened to structural elements with required fasteners. Sags or twists, which develop in suspended system, shall be adjusted. Damaged or faulty parts shall be replaced.
2. Main Runners: Hanger wires shall be double strand saddle-tied to runner channels and ends of hanger wire shall be twisted three times around itself. Main runners shall be located to within 6 inches of parallel wall to support ends of cross furring. Main runners shall not come in contact with abutting masonry or concrete walls. Where main runners are spliced, ends shall be overlapped 12 inches with flanges of channels interlocked, and shall be securely tied at each end of splice with wire looped twice around channels.
3. Furring channels shall be fastened to runner channels and to structural supports at each crossing with tie wire, hairpin clips, or required fastenings. Furring channels shall be located within 2 inches of parallel walls and beams, and shall be cut 1/2 inch short of abutting walls.
4. Ceiling Openings: Support members shall be provided as required at ceiling openings for access panels, recessed light fixtures, and air supply or exhaust. Support members shall be not less than 1 1/2-inch main runner channels and vertically installed suspension wires or straps shall be located to provide at least minimum support specified for furring and wallboard attachment. Intermediate structural members not a part of structural system, shall be provided for attachment or suspension of support members.

5. Light fixtures and air diffusers shall be supported directly from suspended ceiling runners. Wires shall be provided at required locations to support weight of recessed or surface mounted light fixtures and air diffusers.
 6. Control Joints: Ceiling control joints for expansion and contraction shall be located where indicated on drawings. A control joint or intermediate blocking shall be installed where ceiling framing members change direction.
 - a. Interior Ceilings with Perimeter Relief: Control joints shall be installed so linear dimensions between control joints shall not exceed 50 feet in either direction or more than 2,500 square feet in area.
 - b. Interior Ceilings without Perimeter Relief: Control joints shall be installed so linear dimensions between control joints shall not exceed 30 feet in either direction nor more than 900 square feet in area.
- D. Splay Wires and Compression Struts: Install as detailed and as required to prevent upward and sideward motion under seismic conditions, as required by code.
- E. Suspension Under Ducts: For hangers spaced at 4 to 5 ½-foot centers, provide 6 gage (0.192 inch diameter) hanger wires with minimum 2 inch runner channels spaced at maximum 48 inch centers. For greater spans, design system for live load of 10 pounds per square foot of area plus dead load and provide a detail in Shop Drawings.
- F. Furring: Provide framing for horizontal furring as shown or required. Conform to above requirements as applicable.
- 3.04 CLEANING
- A. Remove debris, rubbish, and waste material and legally dispose of off Project site.
- 3.05 PROTECTION
- A. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 2423

CEMENT PLASTER AND METAL LATH

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Lath and Portland cement plaster and stucco.
2. Lath and scratch coat of Portland cement plaster as a substrate for ceramic wall tile.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 3000 – Cast-in-Place Concrete.
3. Section 06 1000 - Rough Carpentry.
4. Section 07 2100 – Thermal Insulation.
5. Section 07 2719 – Plastic Sheet Air Barriers.
6. Section 09 2216 - Non-Structural Metal Framing.
7. Section 09 3013 - Ceramic Tiling.

1.02 SYSTEM DESCRIPTION

- A. Continuous Insulation Under Cement Plaster: Three coat 7/8” cement plaster with fiberglass reinforcing mesh on metal lath over rigid foam insulation with drainage channels over water resistive barrier over plastic sheet air barrier over sheathing over metal studs.
- B. Continuous Insulation on Z Channels Under Cement Plaster: Three coat 7/8” cement plaster with fiberglass reinforcing mesh on metal lath over water resistive barrier over plastic sheet air barrier over rigid foam insulation mounted on steel Z channels with foam tape over sheathing over metal studs.
- C. Three coat 7/8” cement plaster on metal lath over water resistive barrier over plastic sheet air barrier over sheathing over metal studs.
- D. Two coat 1/2” to 5/8” cement plaster over concrete.
- E. One coat cement plaster base for ceramic tile installation.

REFERENCES

A. ASTM International (ASTM):

1. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
2. ASTM A510 - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel.
3. ASTM A641 – Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
4. ASTM A653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
5. ASTM C150 – Standard Specification for Portland Cement.
6. ASTM C206 – Standard Specification for Finishing Hydrated Lime.
7. ASTM C841 - Standard Specification for Installation of Interior Lathing and Furring.
8. ASTM C847 - Standard Specification for Metal Lath.
9. ASTM C897 – Standard Specification for Aggregate for Job Mixed Portland Cement-Based Plasters.
10. ASTM C926 – Standard Specification for Application of Portland Cement-Based Plaster.
11. ASTM C932 - Standard Specification for Surface-Applied Bonding Compounds for Exterior Plastering.
12. ASTM 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.
13. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
14. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster.
15. ASTM C1116 – Standard Specification for Fiber-Reinforced Concrete.
16. ASTM E1190 – Standard Test Methods for Power-Actuated Fasteners Installed in Structural members.

- B. Federal Specifications (FS):
 - 1. FS FF-N-105: Nails, Brads, Staples and Spikes: Wire, Cut and Wrought.
 - 2. UU-B-790A: Building Paper, Vegetable Fiber: (Kraft, Waterproofed, Water Repellent, and Fire Resistant).
- C. International Code Council (ICC):
 - 1. ICC-ES AC11: Acceptance Criteria for Cementitious Exterior Wall Coatings.
 - 2. ICC-ES AC 191: Acceptance Criteria for Metal Plaster Bases (Lath).

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product data for each material and component proposed for installation.
- B. Plaster Samples: Submit minimum 48-inch by 48-inch samples of each stucco, Portland cement plaster texture and construction layout for review. Samples shall be representative of texture, color, and proposed fabrication and finish quality. Maintain reviewed Samples on Project site for reference.
- C. Accessories Samples: Submit 12 inch long samples of metal lath accessories: control joints, expansion joints, corner reinforcements, reveals and screeds.
- D. Certificates: Submit test reports or ICC Evaluation Reports indicating that materials are in compliance with CBC requirements. Cementitious materials shall meet the acceptance requirements of ICC AC11, and metal lath the acceptance requirements of ICC AC191.

1.05 QUALITY ASSURANCE

- A. Pre-Installation Conference: CONTRACTOR shall coordinate and conduct pre-installation conference in accordance to Section 01 3119, Project Meetings, to review the progress of construction activities and preparations for the installation of metal lath and cement plaster and other related work of this Section.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Store weather sensitive materials under cover, off the ground, and kept in a dry condition until ready for use.
- B. Deliver materials to the Project site in manufacturer's sealed and labeled packages.

PART 2 - PRODUCTS

2.01 METAL LATH AND WEATHER RESISTIVE BACKING

A. Metal Lath:

1. Walls and Ceilings: Diamond mesh expanded metal lath, in conformance to ASTM C847, without paper backing. 3.4 pounds per square yard, hot-dip galvanized coating G60 in accordance with ASTM A653. Alabama Metal Industries Corporation (AMICO), California Expanded Metal Products Company (CEMCO), ClarkDietrich, Marino-Ware, or equal.
 - a. V-grooved self-furring type for installation over sheathing. Lath shall be furred out a minimum of 1/4 inch when installed over a solid surface in accordance to DSAIR 25-4.
 - b. Flat type for installation over spaced framing.
2. Walls: Self-furring Welded Wire Lath: Weight 1.95 pounds per square yard, with Class 1 galvanized coating in conformance to ASTM A641. Structa Mega Lath per ICC ESR-2017, as manufactured by Structa Wire Corp, or equal.
3. Walls & Ceilings: Self-furring Welded Wire Lath: Weight 2.2 pounds per square yard, with Class 1 galvanized coating in conformance to ASTM A641 with heavy perforated Kraft paper. V-Truss per ICC ESR-2017, as manufactured by Structa Wire Corp, or equal.

B. Water Resistive Barrier Backing for Metal Lath:

1. One layer of air barrier membrane per Section 07 2719, Plastic Sheet Air Barriers.
2. One layer of asphalt saturated, water resistant Kraft paper backing conforming to Fed Spec UU-B-790A, Type 1, Grade D60, manufactured by Fortifiber, Davis Wire, Leather back, or equal. Furnish for exterior plastering (except on soffits and ceilings), and for mortar-set ceramic wall tile.

C. Self-Adhered Flashing:

1. Compatible with the Plastic Sheet Air Barrier, minimum 25 mils thick, self-sealing and waterproof.
2. Adhesives, primers and sealers for self-adhered flashings and water repellent backing shall be as recommended by manufacturer for installation with specified products and substrates.

2.02 METAL LATH ACCESSORIES

- A. Materials: Minimum 0.0172 inch galvanized steel or 0.0207 zinc alloy with expanded wings. PVC is not permitted. Furnish casing beads, expansion and control joints, weep and vent screeds.
- B. Manufacturers: Alabama Metal Industries Corporation (AMICO), California Expanded Metal Products Company (CEMCO), ClarkDietrich, Stockton Products, Marino-Ware, equal.
- C. Products:
1. Exterior Stress Relief Joints: Sizes and profiles, indicated or required. Control joints shall have expanded wings when attachment flange is installed above the primary water-resistant barrier.
 2. Expansion Joints: Two piece sections designed to accommodate expansion, contraction and shear forces. Industry generic name: #40-2 piece joint.
 3. Control Joints: One-piece sections, with flange designed to engage plaster. Grounds shall provide full 7/8 inch thickness of cement plaster. Industry generic name: XJ-15.
 4. Soffit Drip Screed: Similar to Stockton Products No. 5, with key holes.
 5. Casing Beads: Expanded or standard flange type with 7/8 inch grounds to establish plaster thickness. Industry generic names: J-Mold or # 66.
 6. Welded Wire Corner Reinforcement: 2-5/8 inch wire wings square or bullnose. Industry generic name: CornerAid.
 7. Inner Corner Reinforcement: Shaped reinforcing expanded metal with 3 inch legs, for angle reinforcement. Industry generic name: Cornerite.
 8. Lath Reinforcement: Flat expanded metal lath reinforcing units. Industry generic name: Striplath.
 9. Outside Corner Reinforcing: 2 1/2" legs Class 1 Galvanized Coating complying with ASTM A641. VTruss Straight Corner per ICC ESR-2017, as manufactured by Structa Wire Corp, or equal.
 10. Ventilating Screeds: Soffit, attic, fascia, edge, channel and expansion channel vent screeds, perforated web type, with integral plaster grounds, of sizes indicated on drawings.
 11. Foundation Weep Screeds: Integral plaster ground and weep screed; 3-1/2" minimum attachment flange. Industry generic name: #7 Weep Screed.
 12. Foundation Casing at Walls with Continuous Insulation: Custom shaped galvanized steel "J" mold with weep holes. Width shall be sized to accommodate insulation thickness plus 7/8 inch plaster.

2.03 LATH FASTENERS

- A. Fasteners through Continuous Insulation: Fastener spacing as indicated on drawings.
1. Wood Studs: Fasteners shall be corrosion resistant.
 - a. Nails: In accordance to FS FF-N-105, 0.120 inch with a 3/8 inch diameter head with length that penetrates wood framing (exclusive of sheathing) 1-1/4 inch minimum.
 - b. Lag Screws: 1/4 inch diameter with length that penetrates wood framing (exclusive of sheathing) 1-1/2 inch minimum.
 2. Metal Studs: Corrosion resistant coated wafer head steel #8 screws with length that penetrates framing steel thickness plus three threads minimum.
- B. Fasteners at Locations with no Continuous Insulation:
1. Wood Studs: Fasteners shall be corrosion resistant.
 - a. Nails: In accordance to FS FF-N-105, 0.113 with a 3/8 inch diameter head with length that penetrates wood framing (exclusive of sheathing) 3/4 inch minimum.
 - b. Screws: Type A, in accordance to ASTM C1002, length that penetrates wood framing (exclusive of sheathing) 3/4 inch minimum.
 - c. Staples: In accordance to FS FF-N-105. Minimum 3/4 inch crown, 0.053 inch steel. Staples shall have sufficient length to penetrate studs at least 3/4 inch.
 2. Metal Studs: Wafer head type S or S-12, corrosion resistant, with length to penetrate framing steel thickness plus three threads minimum.
 - a. Screws for fastening to steel members from 0.033 inch to 0.112 inch in thickness shall be in accordance to ASTM C954.
 - b. Screws for fastening to steel members 0.033 inch in thickness and less shall be in accordance to ASTM C1002.
- C. Fasteners for Concrete and CMU Substrates: Power Actuated Fasteners: For attachment of lath to concrete and concrete masonry, recommended by manufacturer for the specific use intended. Minimum 3/4 inch long hardened drive style pin with a 1/2 inch diameter style washer. Fasteners shall be corrosion resistant and provide minimum withdrawal resistance of 50 pounds minimum.
- D. Wire: Wire for fastening lath to supports, tying ends and edges of lath sheets, and securing accessories to lath, 0.0475 inch diameter (# 18 wire). Galvanized soft-annealed steel wire in conformance to ASTM A641.

2.04 PLASTER MATERIALS

- A. Factory Blended Portland Cement Plaster Basecoats and Finish: Products as fabricated by California Stucco, La Habra, Shamrock Stucco, Merlex, Omega Stucco, Inc., Expo Stucco, Spec Mix, Quikrete or other manufacturer member of the Stucco Manufacturer's Association (SMA).
1. Material Standards:
 - a. Portland Cement: ASTM C150.
 - b. Hydrated Lime: ASTM C206.
 - c. Sand: ASTM C897.
 - d. Fibers: ASTM C1116.
 2. Three Coat Systems:
 - a. Scratch and Brown Coats: Factory blended fiber reinforced plaster and sand mix conforming to ASTM C926, and requiring only the addition of water. Total thickness of coats: 3/4 inch.
 - b. Finish Coat: Factory blended cementitious stucco color coat, integrally colored with fade-resistant pigments. Coat thickness 1/8 inch.
 - 1) Finish: Light Dash
 - 2) Color: As selected by ARCHITECT.
 3. Two Coat Systems:
 - a. Brown Coat: Factory blended fiber reinforced plaster and sand mix conforming to ASTM C926, and requiring only the addition of water. Coat thickness 3/8 to 1/2 inch.
 - b. Finish Coat: Factory blended cementitious stucco color coat, integrally colored with fade-resistant pigments. Coat thickness 1/8 inch.
 - 1) Finish: Light Sand
 - 2) Color: As selected by OWNER.
- B. Water: Clean, potable and from domestic source.
- C. Plaster Bonding Agent: In conformance to ASTM C932 and formulated for exterior use. "Weld-Crete", manufactured by Larsen Products Co., or equal.
- D. Plaster Patching Materials:
1. Bonding Agent: Acrylic resin type, Acryl 60, LHP Bonder, or equal.

2. Patching Plaster: Manufactured by Merlex Stucco, Inc., or equal. Furnish fast setting, compatible with existing plaster materials, "Exterior Pronto Patch," Portland cement base coat material, requiring only addition of water. Material shall provide initial set within 20 minutes and final set within one hour.
- E. Flashing: Single ply self-adhesive waterproofing membrane as manufactured by W.R. Grace Company, Jiffy-Seal by Protecto Wrap, W.R. Meadows, Inc., or equal. Furnish for installation behind stress relief joints and backing on horizontal and vertical surfaces exposed to weather; under metal copings and flashings; and window jambs and sills.
- F. Continuous Insulation: Refer to Section 07 2100, Thermal Insulation.
- G. Miscellaneous Materials: Provide additional components and materials required for a complete installation.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that installation of plastic sheet air barrier and flashings, per Section 07 2719, and continuous insulation per Section 07 2100 are complete before starting Work of this Section.

3.02 INSTALLATION-OF WATER RESISTIVE BARRIER

- A. Install one layer of water resistant barrier over air barrier. Install Kraft paper horizontally with each course weather lapped 2 inches over layer below and 6 inches on ends.
- B. Repair and seal tears and holes in water resistive barrier prior to installing lath.
- C. Install single ply self-adhesive flashing per manufacturer's recommendations in areas indicated on the Drawings and at locations where the plaster will be in less than a 60 degree plane or where water can pond, with a six inches extension onto the vertical wall surface. Apply self-adhesive flashing in a "shingle fashion".

3.03 NOT USED.

3.04 INSTALLATION OF LATH AND LATH ACCESSORIES

- A. Exterior Lathing, General: Install in conformance to ASTM C1063 and CBC Chapter 25.
- B. Install longest length of metal lath as possible. Do not use pieces shorter than six feet in length. Attach lath to framing supports not more than seven (7) inches apart along framing supports only.

- C. Apply metal lath with long dimension at right angles to framing or furring supports and lap lath a minimum 1/2 inch at sides and minimum 1 inch on ends. Lap wire lath minimum one mesh on sides and ends. Stagger vertical laps at least 16 inches. Lath shall lap flanges of solid flanged trim accessories by a minimum of 50%.
- D. Ends of lath on open framing (unsheathed) shall occur over supports. Where necessary, install additional studs to provide support for lath ends and support for separate flanges of stress relief joints.
- E. Install trim accessories plumb, level and straight, attachments should not exceed 24 inches on center.
- F. Lath shall not be continuous through control joints. Two-piece Expansion Joints shall have the lath cut, be attached to framing and lath lap the flanges. Place control joints as indicated on elevations. Water resistant barrier shall be continuous behind all control joints and vertical reveals.
- G. Install a weep screed at or below foundation plate line on exterior stud walls in conformance to CBC section 2512. Screed shall be of a type permitting water to drain to exterior of building. Weather-resistant barrier and exterior lath shall cover and terminate on attachment flange of screed.
- H. Powder Actuated Fasteners shall be used on concrete/masonry substrates when lath is applied. Fasteners shall be driven home and avoid spalling of concrete. Pattern shall simulate that of framed walls.
- I. Interior Lathing, General: Install in conformance to ASTM C841 and CBC Chapter 25.
- J. Metal lath shall be fastened to metal supports with specified fastener spaced not more than 6 inches apart or with other recognized fasteners.

3.05 PLASTER APPLICATION - GENERAL

- A. Verify that installation of lath is complete prior to start plastering. Notify the Technical Service Information Bureau upon completion of lath and prior to start of plaster to schedule a lathing installation compliance meeting.
- B. Proportion, mix, apply, and cure plaster in conformance with ASTM C926 and CBC Chapter 25.
- C. Install each plaster coat to an entire wall or ceiling panel without interruption to avoid cold joints and abrupt changes in uniform appearance of succeeding coats. Wet plaster shall abut existing plaster at naturally occurring interruptions in plane of plaster (such as corner angles, openings and control joints) wherever possible. Cut joining, where necessary, square and straight and at least 6 inches away from a joining in preceding coat.
- D. Provide sufficient moisture or curing methods to permit continuous and complete hydration of cementitious materials, considering climatic and Project site conditions.

If water cured, each basecoat shall be continuously damp for at least 48 hours, including weekends and holidays.

- E. Provide sufficient time between coats to permit each coat to cure or develop enough rigidity to resist cracking or other damage when next coat is installed.

3.06 NOT USED.

3.07 INTERIOR PLASTERING

- A. Portland Cement Plaster, Scratch Coat: Install to vertical lathed surfaces where ceramic tile is indicated, and install Portland cement plaster finishes where indicated.

- B. Preparation for Plastering:

1. Verify that lath has been installed securely and that grounds, screeds, casing beads and other accessories are straight, in correct position, and securely fastened in place.
2. Bonding Agent: Install to vertical concrete or masonry surfaces to receive ceramic tile.
3. Concrete and masonry surfaces on which suction must be reduced shall be sufficiently moistened before plastering operations start.
4. Install galvanized expanded metal lath on supports in conformance with requirements of ASTM C1063 and CBC.

- C. Number of Coats and Thickness: Interior plastering to receive paint shall consist of the following, with thickness measured from face of supports or surface:

1. On Concrete or Masonry: two coats, brown and finish, 5/8 inch thick.
2. On Metal Lath: three coats, scratch, brown and finish 7/8 inch thick.

- D. Proportions for Interior Plaster: Adhere to current edition of CBC for proportions and curing requirements.

1. Admixtures shall be proportioned, mixed and installed in accordance with printed directions of manufacturer.

- E. Mix factory blended plaster using only sufficient water to obtain proper consistency before installation. Do not mix any more material at any time than can be installed within ½ hour after mixing. Do not allow material to remain in mixer or mixing boxes overnight.

- F. Application:

1. Dash Bond Coat: Dash on surface, leave undisturbed, and maintain damp at least 24 hours following installation. Omit Dash bond coat when liquid bonding agent is used.
 2. Scratch Coat: Install with sufficient material to form good keys, thoroughly cover lath, and cross scratch.
 3. Brown Coat: Rod to a straight, true and even surface. Brown coat must be 1/16 inch below face of grounds to provide adequate space for finish coat. Float surface to increase density.
 4. Smooth Finishes: Install two coats for a thickness of 1/8 inch. Install second coat after finish coat begins to set. Install to a true, even plane and trowel to a smooth finish, free from blemishes.
 5. Float Finishes: Install to a thickness between 1/16 inch to 1/8 inch, install and uniformly float to true planes.
 6. Plaster Screeds: On metal lath or wire fabric lath, install plaster screeds wherever permanent grounds are too far apart to serve as guides for rodding.
- G. Curing Interior Plaster: Adhere to requirements of CBC.

3.08 QUALITY CONTROL

- A. Finish interior and exterior plaster to a uniform texture, free of imperfections and flat within 1/4 inch in 5 feet. Form a suitable foundation for paint and other finishing materials. Avoid joining marks in finish coats.

3.09 REPAIR OF DAMAGED PLASTER

- A. Plaster Detached from Framing:
1. Remove loose and broken plaster.
 2. Repair or replace damaged water-resistant backing and lath in compliance with specified standards.
 3. Remove stucco finish from surrounding area in the same plane by sandblasting.
 4. Install a scratch coat and a brown coat mixed with liquid bonding agent instead of water to the areas devoid of plaster.
 5. Install a coat of liquid bonding agent to entire wall plane.
 6. Install a 1/8 inch thick stucco finish coat to entire wall plane and match existing texture and color.
- B. Cracked Plaster 1/8 inch to 1/2 inch:

1. Remove loose material from crack with a wire brush.
 2. Fill crack with slurry of stucco and liquid bonding agent.
 3. Install a coat of liquid bonding agent to entire wall plane.
 4. Install 1/8 inch thick stucco finish to entire wall plane and match existing texture and color.
- C. Cracks Larger than ½ inch - Painted:
1. Remove loose material from crack with a wire brush.
 2. Fill crack with slurry of one part Portland cement to three parts masonry or stucco sand and liquid bonding agent to match existing texture of adjacent surface.
 3. Paint entire wall plane, color to match existing.
 4. Where patching of plaster over existing lath is feasible, fasten loose lath and install new lath with nails at 6 inch centers. Where metal is furnished, lap new lath over existing 6 inches and tie at 6 inch centers. Install paper backings as required, shingled into existing.
 5. Patching of Holes, Cracks, and Gouges: Holes, cracks, gouges, missing sections, and other defects in existing improvements shall be patched. For holes over 1 inch in size, cut small sections of lath and place in opening attached to existing material. Install 3 coats of plaster. For holes one inch and smaller, install bonding agent to existing surfaces and neatly fill hole with plaster, installing necessary coats to match adjacent surfaces, eliminate cracks and match existing surface texture. Cracks, gouges, and other defects shall be filled with plaster or spackle as required and neatly finished to match adjacent existing improvements.

3.10 CLEANING

- A. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

3.11 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 2900

GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Gypsum board wall and ceiling systems.
 - 2. Gypsum Liner.
 - 3. Cement Tile Backer Board.
- B. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 2. Section 06 1000 - Rough Carpentry.
 - 3. Section 07 9200 - Joint Sealants.
 - 4. Section 09 2216 - Non-Structural Metal Framing.
 - 5. Section 09 9000 - Painting Coating.

1.02 PROJECT REQUIREMENTS

- A. Design Requirements: Provide systems capable of resisting deflection as required by CBC and authorities having jurisdiction.
- B. Regulatory Requirements: Comply with CBC requirements for design and installation.

1.03 SUBMITTALS

- A. Shop Drawings: Submit Shop Drawings indicating complete suspension system including connections, anchorage, and trim features.
- B. Material Samples: Submit 18 inch by 18 inch Samples of the texture coat of gypsum board panels with edges taped.
- C. Product Data: Submit manufacturer's catalog data for each product proposed for installation.

1.04 QUALITY ASSURANCE

- A. Comply with following as a minimum requirement:

1. ASTM C475 – Standard Specification for Joint Compound and Joint Tape for finishing Gypsum Board.
 2. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
 3. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
 4. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 5. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 6. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units.
 7. ASTM C1396 - Standard Specification for Gypsum Board.
 8. ASTM C1629 - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.
 9. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.
 10. ASTM D3274 – Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation.
 11. Underwriters Laboratories (ULI) requirements and listings for fire-rated materials and products classification.
 12. GA 214 - Gypsum wallboard finish shall conform to requirements of GA 214, Application and Finishing of Gypsum Panel Products, published by the Gypsum Association, and as specified herein.
 13. GA 600 - Gypsum wallboard shall conform to requirements of GA 600 Fire Resistance Design Manual, published by the Gypsum Association.
 14. American National Standards for the Installation of Ceramic Tile.
 15. ANSI A118.9 - Specification for Cementitious Backer Units.
- B. Qualifications: Installer shall have a minimum 5 years experience in installing and finishing gypsum board.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original, factory sealed packages, containers or bundles bearing brand name and name of manufacturer.

- B. Materials shall be kept dry. Gypsum wallboard shall be neatly stacked flat; avoid sagging and damage to edges, ends, and surfaces.
- C. Fire-rated materials shall have fire classifications numbers attached and legible.
- D. Provide all means necessary to protect gypsum board systems before, during, and after installation.
- E. Gypsum wallboard showing any evidence of water damage shall not be installed. Gypsum wallboard showing evidence of water damage after installation shall be removed and replaced.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Georgia-Pacific.
- B. National Gypsum Co.
- C. U.S. Gypsum Co.
- D. Or equal.

2.02 MATERIALS

- A. Gypsum Board Type X (fire-resistant) or Type C or Type ULIX as required by fire rated design and acoustic requirements: 5/8 inch thick, 4-foot wide and up to 16-foot long conforming to ASTM C1396 with long edges tapered.
- B. Cement Tile Backer Board: In addition to manufacturers listed in Article 2.01, James Hardie Building Products Inc.
 - 1. Water resistant panels, 1/4 inch thick on horizontal and 1/2 inch thick on vertical surfaces, 4-foot wide and up to 8-foot long conforming to conforming to one of the following requirements:
 - a. Aggregated Portland cement board with polymer-coated, woven glass-fiber mesh embedded in front and back surfaces.
 - b. Cementitious board surfaced with fiberglass reinforcing mesh on front and back and complying with ANSI A118.9 and ASTM C1325.
 - 2. Tile backer boards shall meet the following requirements:
 - a. Resistance to Mold Growth: Minimum score of “10” when tested in accordance to ASTM D3273 and evaluated in accordance with ASTM D3274.

2.03 ACCESSORIES

- A. Metal Trim: Paper-faced metal drywall beads and trim meeting ASTM C1047, as manufactured by USG/Beadex, or equal. Trim units shall be of size and type to fit gypsum board construction and shall include corner beads, casings, edge trim and other shapes indicated and required. Provide 30 year warranty against edge cracking.
- B. Joint Compound for gypsum board products: meeting the following requirements:
 - 1. Shall conform to ASTM C475.
 - 2. In areas subject to moisture after installation such as bathrooms and locker areas use setting type joint compound.
 - 3. Interior areas not subject to moisture after installation use drying Type Joint compound.
- C. Joint Tapes for gypsum boards: Shall conform to ASTM C475.
- D. Joint mortar and Tape for Cement board.
 - a. Use type as recommended by cement board manufacturer
 - b. Fiberglass tape: Durock brand tile backer tape
 - c. Joint Mortar: Meet ANSI 118.4
- E. Finishing Materials: Texture coat finish material shall be manufactured by U.S. Gypsum, Hamilton, or Highland Stucco and Lime Products, Inc., or equal.
- F. Acoustical Sealant: Non-hardening, non-shrinking, for use in conjunction with gypsum board, as recommended by Board Manufacturer and conforming to ASTM C919. Sealant shall maintain fire and sound rating assembly.
- G. Fasteners:
 - 1. Self-drilling, self-tapping bugle-head drywall screws; in conformance to ASTM C1002. No. 6 Type S or S12, 1 5/8-inch long for metal framing,
 - 2. Wood framing: Screws: Type W 1 5/8-inch minimum length for single-layer panels. Screws shall be furnished with a corrosion-resistant treatment.
 - 3. Adhesive: as recommended by board manufacturer and in compliance to ASTM C557.
 - 4. Provide stainless steel fasteners in coastal or aggressive environments.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Metal Trim:

1. Provide corner beads at outside corners and angles, metal casing where gypsum board terminates at uncased openings, metal edge trim where board edges abut horizontal and vertical surfaces of other construction.
2. Install trim in accordance with manufacturer's directions with appropriate joint compound. Install trim in longest practical pieces.

B. Gypsum Board:

1. Install gypsum board in conformance with ASTM C840, fire rated design, and sound rating.
2. Gypsum board shall be cut by scoring and breaking or by sawing, working from face side. Where board meets projecting surfaces it shall be scribed and neatly cut. Unless conditions require otherwise, gypsum board shall be installed first to ceilings, then to walls. End joints shall occur over a support. Install panels of maximum practical length so a minimum number of end joints occur.
3. End joints shall be staggered and joints on opposite sides of a partition shall be arranged to occur on different studs. Joint layout at openings shall be installed so no end joints will align with edges of openings.
4. Except where specified otherwise, fasteners shall be spaced not less than 3/8 inch from edges and ends of gypsum board. Do not stagger fasteners at adjoining edges and ends.
5. Install gypsum board vertically or horizontal as permitted by specific UL Design at walls. Fasten board with drywall screws spaced not to exceed 8 inches on centers around perimeter of boards and 8 inches on centers on intermediate studs. Space screws at 8 inches on centers along top and bottom runners. Screws shall be driven to provide screwhead penetration just below gypsum board surface without breaking surface paper. Where electrical outlet and switch boxes are indicated, provide adjustable attachment brackets between studs.
6. Install gypsum board to ceiling framing with long dimension at right angles to furring channels, or wood framing members, and fasten with specified drywall screws or nails spaced 6 inches to 7 inches on centers across board. Screws or nails shall be not less than 1/2 inch from side joints and 3/8 inch from butt end joints. Abutting end joints shall occur over furring channels and end joints of boards shall be staggered. Support cutouts or openings in ceilings with furring channels.
7. Install access doors, furnished under another section, in correct location, plumb, or level, flush with adjacent construction, and securely fastened to framing.

C. Cement Board Backer System:

1. In shower areas, install water barrier in shingle-like manner to prevent water infiltration into stud cavity. Pre-cut all board to required sizes and make necessary cut-outs.
2. Install cement board in accordance with UL Design and SA-932. Install Cement board plumb and flat. Shim behind board as required.
3. Fasten cement board to steel studs spaced max. 16" o.c. and bottom runners with cement board fasteners spaced 8" o.c. maximum with perimeter fasteners at least 3/8" and less than 5/8" from ends and edges. Studs shall be not less than 20 gage.
4. Tape joints with cement board tape and joint mortar. Finished surface shall be level within 1/8" in 10".

3.02 TOLERANCES

- A. System shall appear flat and monolithic with no exposed joints.

3.03 JOINT TREATMENT AND FINISHING

*At completion of specified taping and finishing, install one coat of drywall primer as specified hereafter

- B. Levels: Install tape bedding compound, tape, and finishing cement on joints in wallboard as required for specified levels of finish.
- C. Levels 2 through 5:
 1. Install joint cement and finishing cement over screw heads. Treat all inside corners with joint cement, tape, and finishing cement. Treat outside corners with corner beads and finishing cement.
 2. Provide metal casing beads at all edges of gypsum wallboard, which abut ceiling, wall, or column finish, and elsewhere as required, such as openings, offsets, etc. Install all exposed joints, trims, and attachments non-apparent following installation of paint or other finishes. If joints and fasteners are visibly apparent, correct defects as required.
 3. Seal raw edges of plumbing openings and boards that have been cut to fit with sealing compound brushed on.
 4. When entire installation is completed, correct and repair broken, dented, scratched or damaged wallboard before installation of finish materials by other trades.
- D. Levels 3 and 4: Install one coat of drywall primer over entire surface prior to painting.
- E. Level 5: Install one coat of skim coat over entire surface, followed by one coat of drywall primer over entire surface prior to painting.

3.04 REQUIRED LEVELS OF FINISH

- A. Finishes shall conform to GA 214
- B. Unless otherwise indicated or specified, levels of finish required shall be as follows:
 - 1. Level 1: Plenum areas above ceilings, insides of shafts, and other concealed areas. Taping to be as required for fire rated assemblies.
 - 2. Level 2: Water-resistant wallboard backing for high moisture areas to be covered with a water resistant surface other than tile, vinyl or paint, i.e stainless steel cladding etc.
 - 3. Level 3: Backing for vinyl wall covering and adhered acoustic tile. Also, provide where textured finish is indicated.
 - 4. Level 4: Exposed painted wallboard in classrooms, utility rooms, and similar spaces not requiring Level 5 finish.
 - 5. Level 5: Exposed, painted wallboard in offices and corridors.

3.05 TEXTURE COAT

- A. Spray install texture coat to interior gypsum board surfaces where indicated on Drawings.
- B. Texture coat shall provide a uniform splatter pattern finish with an 80 percent minimum coverage of the entire surface area.
- C. Provide protection from spray for interior surfaces of electrical boxes and wiring.

3.06 CLEAN-UP

- A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

3.07 PROTECTION

- A. Protect Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 3013

CERAMIC TILING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Ceramic tile.
3. Waterproof membrane for tile.
5. Mortar setting beds for floor and wall tile.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 03 3000 - Cast-In-Place Concrete.
3. Section 06 1000 - Rough Carpentry
4. Section 07 9200 - Joint Sealants
5. Section 09 2423 - Cement Plaster and Metal Lath.
6. Section 09 2900 - Gypsum Board.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's data, standard specifications, Material Safety Data Sheets, and other technical information for each product specified.
- B. Material Samples: Manufacturer's standard palette, indicating full range of tile colors, textures, and grout colors.
- C. Mock-Ups: For each type, color, and texture, minimum one foot square or three full tile courses, on Plexiglas to demonstrate proper bond mortar and coverage; grout color, hardness and depth.
- D. Installation Instructions: Manufacturer's preparation and installation instructions.
- E. Product Certificates: Signed by manufacturer certifying that products furnished comply with requirements of this Specification.

1.03 QUALITY ASSURANCE

- A. Comply with applicable parts of the following codes or standards as a minimum requirement:
1. ANSI A108, American National Standard Specifications for the Installation of Ceramic Tile.
 2. ANSI A118, American National Standard Specifications for Ceramic Tile Installation Materials.
 3. ANSI A136.1, Standard Specifications for Ceramic Tile.
 4. ASTM A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
 5. ASTM C185 - Standard Test Method for Air Content of Hydraulic Cement Mortar.
 6. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
 7. ASTM C150 - Standard Specification for Portland Cement.
 8. ASTM C241 - Standard Test Method for Abrasion Resistance of Stone Subjected to Foot Traffic.
 9. ASTM C206 - Standard Specification for Finishing Hydrated Lime
 10. ASTM C503 - Standard Specification for Marble Dimension Stone.
 11. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
 12. ASTM D4551 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Flexible Concealed Water-Containment Membrane.
 13. Tile Council of North America (TCNA) – Current edition of “Handbook for Ceramic Tile installation”.
- C. Source of Materials: Provide materials obtained from one source for each type and color of tile, grout, and setting materials.
- D. Consistent Quality: Products shall be consistent in appearance and physical properties.
- E. Comply with requirements of California Building Code and ADAAG.

- F. Qualifications of Tile Manufacturer: Company specializing in ceramic tile, mosaics, pavers, trim units, and thresholds with five years minimum experience.
- G. Qualification of Installation System Manufacturer: Company specializing in installation systems/ mortars, grouts/ adhesives with ten years minimum experience.
- H. Qualifications of Installer: Company specializing in installation of ceramic tile, mosaics, pavers, trim units and thresholds with five years experience with installations of similar scope, materials, and design.
- I. Pre-Construction Meetings: Prior to start of Work of this section and after approval of submittals, schedule an on-site meeting between Contractor and representatives of the material manufacturer and tile installer to review construction conditions and Drawings for conformance with the requirements of this Specification for each substrate.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver tile and other materials in sealed containers, with manufacturer's labels intact.
- B. Keep all materials clean and dry.

1.05 MAINTENANCE

- A. Extra Materials: Provide a minimum of five percent of each type and color as the installed tile, in manufacturers' cartons and labeled.

1.06 WARRANTY

- A. Manufacturer shall provide a five year material warranty.
- B. Installer shall provide a five year fabrication and installation warranty.
- C. For waterproofing, manufacturer shall provide a 10 year material warranty for waterproofing installation, tile setting, and grouting materials.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Tile: To establish quality, Specification is based on ANSI A137.1 Standard Grade. Equivalent tile products from the following manufacturers may be provided:
 - 1. Dal-Tile Corporation.
 - 2. American Olean Company.

3. Florida Tile, Inc.
 4. Equal.
- B. Installation Materials: To establish quality for setting and waterproofing materials, Specification is based on ANSI A137.1. Products and methods of the following manufacturers may be provided:
1. Laticrete International, Inc.
 2. Custom Building Products.
 3. Mapei.
 4. Equal.

2.02 MATERIALS

- A. Colors, Textures, and Patterns: Tile shall be from manufacturer's standard product line. 90 percent shall be from "price group 2", and "10 percent from price group 3", unless indicated otherwise. Tile trim and accessories shall match adjoining tile. Grout color shall match tile unless otherwise indicated.
- B. Tile sizes: Tile sizes specified are modular dimensions unless otherwise indicated.
- C. Mortar Sand: ASTM C144.
- D. Portland Cement: ASTM C 50, Type I or II.
- E. Hydrated Lime: ASTM C207, Type S; or ASTM C206 Type S
- F. Portland Cement Mortar: ANSI 118.1
- G. Portland Cement Mortar Bed: Sand-cement mortar mix gauged with Laticrete Acrylic Admix or Custom Building Products Thin-Set Mortar Admix.
- H. Portland Cement Mortar Bed for Shower Areas: Laticrete 226 Thick Bed Mortar Mix Gauged with Laticrete 3701 Mortar and Grout Admix or on site mix per ANSI A108.1A with Custom Building Products Thin-Set Mortar Admix.
- I. Latex Portland Cement Bond Mortar: Laticrete 317 Floor & Wall Thinset gauged with Laticrete 3701 Admix, or Custom Building Products Master Blend mixed with Thin-Set Mortar Admix.
- J. Waterproof Membrane: Cold-applied, single component liquid with embedded reinforcing fabric where recommended by manufacturer: Laticrete Hydro Ban Waterproof Membrane or Custom Building Products Red Guard Waterproof Membrane.

- K. Reinforcing Wire Fabric: 2-inch by 2-inch, 16 by 16 gage, galvanized electrically welded wire reinforcing, per ASTM A 185.
- L. Latex Portland Cement Grout: Laticrete Sanded Grout (1500 Series), Custom Polyblend Sanded Grout or Laticrete Unsanded Grout 1600 Series (for joints smaller than 1/8”), Custom Polyblend Unsanded Grout.
- N. Cleavage Membrane and Wall Backing Paper: Cleavage membrane shall be 15-pound asphalt-saturated felt manufactured according to ASTM D226 Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing
- O. Separation Material (for all sealed joints including perimeters and quarry-tile fields of floor mortar beds): Quality Foam, QF 200 white, 3/8 inch wide by 5-inch high.
- P. Backer Rod for sealants (for ceramic mosaic fields): Polyethylene foam, closed-cell, flexible and compressible, 3/16 inch diameter.
- Q. Cleaner and Sealer:
 - 1. Cleaner and sealer shall be from one manufacturer, acceptable to tile and grout manufacturers. To establish quality, the Specification is based on Aqua Mix Inc. Equivalent products from Miracle Sealants Co., Watco Tile and Brick, or equal may be provided.
 - 2. Cleaner: Aqua Mix Concentrated Tile Cleaner, neutral phosphate-free cleaner, or Custom Building Products Tile Lab Concentrated Tile and Stone Cleaner.
 - 3. Sealer: Aqua Mix Penetrating Sealer, fungus- and bacteria-resistant, stain-resistant, and slip-resistant as specified for tile, Custom Building Products Tile Lab Surface Gard, or equal.
- R. Sealants:
 - 1. Sealant and primer shall be from one manufacturer, acceptable to tile and grout manufacturers. See Section 07 9200 - Joint Sealants.
 - 2. Ceramic Mosaic Tile: One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.
 - 3. Quarry Tile: Multipart, Pourable Urethane Sealant for Use T: ASTM C 920; Type M; Grade P; Class 25; Uses T, M, A, and, as applicable to joint substrates indicated, O.

2.03 TILE

A. Unglazed Ceramic Mosaic Floor Tile:

1. Size: 1 inch by 1 inch or as indicated.
2. Colors and patterns as selected by Architect from price groups specified.
3. Slip Resistance: Resistant to slipping appropriate to the installed conditions of use, as required by the California Building Code and ADAAG.
 - a. As a minimum, the coefficient of friction as measured by ASTM C1028 shall be 0.6 except ramps shall be 0.8.
 - b. For tile in shower and locker areas, incorporate grit into tile to increase slip resistance.

B. Glazed Wall Tile:

1. Size: 4-1/4 inch by 4-1/4 inch face dimensions by 5/16 inch thick (ceramic mosaic tile may also be used on walls).
2. Colors and patterns as selected by Architect from price groups specified.

C. Trim:

1. Integral bullnose at external corners.
2. Provide bullnose where tile projects from jamb.
3. Mosaic tile base with wall tile above: A3401.
4. Mosaic tile base without wall tile above: S3619T (6-inch high sanitary covered base).
5. Bullnose at wainscot: A4200 and A4402.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Examine substrates and conditions for compliance with installation requirements. Verify that all penetrations through substrate have been installed. Proceed with Work only after all conditions are in compliance.
- B. Substrates shall be firm; dry; clean and within flatness tolerances required by relevant ANSI A108 tile installation standards. Prepare surfaces as follows:

1. Concrete Floors: Allow concrete floors to cure for 28 days minimum before beginning tile and grout installation. Remove laitance, sand, dust, and loose particles.
 2. Plywood Subfloors: Before installing mortar setting bed over plywood sub-floors, install cleavage membrane over sub-floor. Anchor firmly in place and lap joints 6 inches minimum. Turn membrane up 6 inches at walls and beneath building felt on walls.
- C. Substrates to receive wall tile and base shall be:
1. Scratch coat of cement plaster, as specified in Section 09 2423 - Cement Plaster and Metal Lath (required in student restrooms, showers and locker rooms, and quarry tile bases).
 2. Cementitious backing panels, as specified in Section 09 2900 - Gypsum Board.
- D. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical items of Work, and similar items located in or behind tile has been completed before installing tile.
- E. Verify that joints and cracks in tile substrates are coordinated with caulked-joint locations; if not coordinated, adjust as required by the Architect.
- F. Do not install tile until construction in spaces is completed and ambient temperature and humidity conditions are maintained in compliance with referenced standards and manufacturer's written instructions.
- G. Protect adjacent surfaces during progress of Work of this section.

3.02 TILE INSTALLATION, GENERAL

- A. Install tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Center the tile fields in both directions for each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
- B. For tile mounted in sheets: Joints between tile sheets shall be the same width as joints within tile sheets.
- C. Extend Work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions, unless otherwise indicated. Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without damaging tile. Carefully grind the cut edges of tile abutting trim, finish, or

built-in items. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

- E. Locate joints, directly above joints in concrete substrates, at horizontal and vertical changes in plane, or where indicated during installation of mortar beds. In quarry tile floors, provide at 12 feet on center maximum. Provide 3/8-inch wide foam at joints. Do not saw-cut joints after installing tiles.
- F. Prepare and clean joints to be sealed. Apply sealants to comply with requirements of Section 07 9200 - Joint Sealants.
- G. Conform to manufacturers printed instructions, and applicable requirements of ANSI and TCNA Standards.

3.03 TILE INSTALLATION, FLOOR

- A. Install reinforcing and latex Portland-cement mortar setting bed over cured concrete slab or cleavage membrane on plywood floor. Lap reinforcing at least one full mesh, and support or lift so that it is approximately in the middle of mortar bed. Do not abut against vertical surfaces. Install foam separation material at perimeters and expansion joint locations for caulked joints.
- B. Mix setting mortar in accordance with ANSI recommendations.
- C. Once begun, mortar installation must continue until room is completed. Discard any batch not floated and finished within ½ hour of mixing. Firmly compact before screeding. Screed to true plane and pitch as indicated. Slope mortar bed sufficiently that water flows to drain and no puddling will occur. Slope mortar down to floor drains for proper installation of waterproof membrane. After screeding, firmly rub down with steel or wood float.
- D. Cure mortar bed with a light fog spray of water and cover with 6-mil Visqueen for 72 hours.
- E. Waterproof Membrane:
 - 1. Install waterproof membrane where indicated and in all kitchen, toilet, shower, and locker areas according to TCNA Standards. Extend membrane up wall mortar or backing board as follows:
 - a. 3 inches above top of curb wall.
 - b. 6 inches minimum above floor.
 - 2. Insure that layers of membrane are fully inserted into clamping ring of floor drain. After membrane installation and before tile setting, install pea gravel around sub drain to prevent blockage of weep holes and place mortar to proper level for setting tile.

3. For tile installations other than slab on grade, before setting tile and after seven days curing, water test membrane by damming drains and doors, filling floor with water to 4-inch minimum depth, and leaving for 24 hours. Correct any leaks and re-test before proceeding. After testing, protect membrane from traffic until tile Work begins.
- F Thin Set Method: Confirm substrate is completely clean and free of dust. Cut foam at floor perimeters flush with top of mortar bed. Insure that bond coats do not intrude into joints to be sealed. Install tile over properly cured setting bed or waterproof membrane utilizing "thin-set" method with latex portland cement bond mortar, in accordance with manufacturer's printed instructions and ANSI A108.5.
 - G. Minimum coverage of bond mortar shall be 80 percent except 95 percent in shower areas, for quarry tile, and exterior installations. Place tile into fresh mortar press tile to insure full contact. Before setting proceeds, set and remove three tiles or sheets of tiles to confirm specified coverage of bond mortar. If coverage is insufficient, utilize a larger toothed trowel or back butter tiles until proper coverage is provided.
 - H. Install tile on floors with the following joint widths:
 1. Ceramic Mosaic Tile: 1/16 to 1/8 inch.

3.04 TILE INSTALLATION, WALLS

- A. Install wall mortar beds before floor mortar beds.
- B. On plaster walls, clean scratch coat surface of loose or foreign materials, fog spray with water, and install brown coat mortar bed over scratch coat to a thickness not less than 3/8 inch and not greater than 3/4 inch. Once started, wall mortar installation must continue until wall is completely floated. Discard any batch not floated and finished within 1/2 hour of mixing. As soon as wall mortar is dried to sufficient hardness, but still plastic, firmly rub with wood float.
- C. Cover cure with 40-weight Kraft paper for 72 hours minimum.
- D. Install tile over properly cured setting bed, waterproof membrane, or cementitious backing panels utilizing "thin-set" method with latex portland cement bond mortar, in accordance with manufacturer's printed instructions and ANSI A108.5. Confirm substrate is completely clean and free of dust. Insure that bond coats do not intrude into joints to be caulked.
- E. Minimum coverage of bond mortar shall be 80 percent except 95 percent in shower areas or exterior installations. Set and test as specified for floors.
- F. Lay out Work so tiles will be centered on each wall or section of wall in order to minimize tile cuts. Lay out tile wainscots to next full tile beyond dimensions indicated. Spot setting bed with mortared tile, set plumb and true, accurately indicate plane of finished tile surfaces.

- G. Install tile on walls with following joint widths:
 - 1. Glazed Wall Tile: 1/16 inch.
 - 2. Ceramic Mosaic Tile: 1/16 to 1/8 inch.
- H. Horizontal joints shall be level, vertical joints plumb with surfaces true and plumb, edges of tiles flushed.
- I. Rub exposed cuts smooth with a fine stone; no cut edge shall be set against a fixture or adjoining surface without a 1/16 inch joint to be caulked.
- J. Install access doors where required, furnished under another section, in correct location, plumb or level, flush with adjacent construction, and securely fastened to framing.

3.05 GROUTING

- A. Prior to starting, ensure that all tile surfaces are clean and excessive bond mortar is scraped and vacuumed from joints (approximately 2/3 depth of tile should be open for grouting). Follow manufacturer's instructions for mixing grout. Once grout Work commences, proceed until complete wall or floor area is finished utilizing one batch of grout.
- B. Latex portland cement grouting: Dampen tile surface and joints with water using sponge, but leaving no puddles in joints. Force grout into joints using sufficient pressure on rubber float so as to fill joints completely, and scrape excess grout off tile surface with rubber float. Smooth or tool grout to uniform joint finish. Do not over water.
- C. Curing latex Portland cement grout: Remove final grout haze with clean soft cloth, and cover with 40-weight Kraft paper to cure. Leave paper in place for protection. Cover wall surfaces with 40-weight Kraft paper for 72 hours.
- D. Epoxy grouting: Do not dampen tile. Follow manufacturer's instructions for mixing grout. Force grout into joints with sufficient pressure on rubber float so as to fill joints completely, and scrape excess grout off tile surface with rubber float. Smooth or tool grout to uniform joint finish. Do not allow grout to harden on face of tile.
- E. Curing epoxy grout: Do not cover floor, but do not allow foot traffic for 72 hours. Then, if grout is not tacky, cover with 40-weight Kraft paper for protection.

3.06 CLEANING AND SEALING

- A. If grout scum is not visible on tile surface after curing, clean tile surface with clear water. Remove and replace cracked, broken or defective Work with proper material.

- B. If, when curing membrane is removed, grout scum is visible on tile surface, use the following cleaning method:
 - 1. Immediately recover floor with paper or felt and allow to continue curing for a minimum of 14 days; uncover floor and maintain entire tile surface saturated with clean cool water for not less than two hours.
 - 2. Utilize a neutral cleaner acceptable to manufacturers of tile and grout, and follow manufacturer's instruction. Do not provide generic acid cleaners.
 - 3. Wet tile floors and apply cleaning solution to floor surface, then scrub with a brush. Rinse area several times with clean water to flush solution off floor surface.
- C. Apply penetrating sealer in accordance with manufacturer's instructions utilizing a dense sponge applicator, paint pad, sprayer or brush. Avoid overlapping, puddling, and rundown. Completely wipe surface dry within 3 to 5 minutes using cotton or paper towels; do not allow sealer to dry on tile. After two hours, test surface by applying water droplets to surface. If water is absorbed, apply a second coat. Avoid surface traffic for 24 hours.

3.07 SEALANTS

- A. Insure joints to be sealed are free of setting and grouting materials and construction debris. Do not permit any foot traffic on installed sealants for a minimum of 48 hours or protect with hardboard strips.
- B. Install in accordance with Section 07 9200 - Joint Sealants.

3.08 PROTECTION

- A. Admit no traffic where tile is installed until mortar and grout has set for a minimum of 72 hours.
- B. Protect Work of this section until Substantial Completion.

3.09 CLEAN UP

- A. Remove rubbish, debris, and waste material and legally dispose of off the Project site.

END OF SECTION

SECTION 09 5113

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Lay-in acoustical ceiling systems and metal suspension system.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 09 2216 - Non-Structural Metal Framing.
3. Section 09 2900 - Gypsum Board.
4. Section 09 5115 - Vinyl-Faced Acoustical Ceilings.
6. Division 23 - HVAC.
7. Division 26 - Electrical.

1.02 QUALITY ASSURANCE

A. Ceiling systems shall consist of lay-in acoustical ceiling panels by a single manufacturer and suspension systems by a single manufacturer for the entire project.

B. Qualifications of Installer: Minimum five years experience in installing acoustical ceiling systems of the types specified.

C. Design Criteria:

1. Deflection of finished surface to 1/360 of span or less.
2. 1/8 inch maximum permissible variation from true plane measured from 10 foot straightedge placed on surface of finished acoustical fiber units.

D. Requirements of Regulatory Agencies:

1. Conform to CBC requirements and UL - Tunnel Test for Fire Hazard Classification of Building Materials.
2. CISCA: Acoustical Ceilings Use and Practice.

E. American Society for Testing and Materials (ASTM):

1. ASTM A641 - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
2. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

3. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
4. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
5. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
7. ASTM E580 – Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
8. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.
9. ASTM E1414 - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum.
10. ASTM E1477 - Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.

F. American Society of Civil Engineers (ASCE):

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures, as amended by CBC 1615A.1.16.

1.03 SUBMITTALS

A. Samples:

1. Lay-in panels of each specified type, 6-inch by 6-inch minimum size.
2. Suspension System: 12-inch long samples of suspension system members, connections, moldings and wall angles, for each color specified.

B. Shop Drawings:

1. Indicate complete plan layouts and installation details.
2. Indicate related Work of other sections which is installed in, attached to, or penetrates ceiling areas, such as air distribution and electrical devices.

C. Product Data:

1. Suspension System for Lay-in Ceiling: Printed data for suspension system components, including load tests, indicating conformance to specified tests and standards.
2. Acoustical units: Printed data indicating conformance to specified tests and standards.

D. Maintenance Materials: Provide extra panels equal to 1 percent of the area of each typical module size of acoustical panel, but not less than 8 of each specified size, style and color.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the Project site in original sealed packages.
- B. Storage: Store materials in building area where they will be installed, in original package. Keep clean and free from damage due to water or deteriorating elements.
- C. Handle in a manner to prevent damage during storage and installation.

1.05 PROJECT CONDITIONS

- A. Installation of acoustical ceiling system shall not begin until the building is enclosed, permanent heating and cooling is in operation, and residual moisture from plaster and concrete work has dissipated. Building areas to receive ceilings shall be free of construction dust and debris.
- B. Environmental Requirements: Maintain temperature in space at 55 degrees F or above for 24 hours before, during, and after installation of materials.
- C. Scheduling:
 - 1. Before concealing Work of other sections, verify required tests and inspections have been completed.
 - 2. Coordinate with related Work of other sections. Coordinate location and symmetrical placement of air distribution devices, electrical devices, and penetrations with related Work section.

1.06 WARRANTY

- A. Manufacturer shall provide a 10 year material warranty.
- B. Installer shall provide a two year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. USG Corporation.
- B. Armstrong World Industries.
- C. CertainTeed Ceilings Corp.
- D. Equal.

2.02 SUSPENSION SYSTEM

- A. Metal suspension system for acoustical lay-in tile shall be hot-dipped galvanized steel conforming to ASTM A653. Main beams and cross tees shall be double-web steel construction with exposed flange design, with factory punched cross tee slots, hanger holes and integral couplings.
- B. Metal suspension system for acoustical lay-in tile shall conform with ASTM C635, C636 and E580 and section 13.5.6 of ASCE 7, as amended by CBC Section 1615A.1.16, for installation in high seismic areas.

- C. Structural classification of suspension systems shall be heavy-duty in conformance to ASTM C635.
- D. Vertical Strut: USG Donn Compression Post, or equal, or as indicated; types and designs complying with requirements of authorities having jurisdiction and seismic Zones D, E and F requirements. Provide base attachment clip for connection of vertical strut to main beams.
- E. Wall Molding: Fabricated from galvanized steel with 2-inch horizontal leg and hemmed edges, same finish as main and cross tees.
- F. Spacer/Stabilizer Bars: Provide for tying together the ends of main runners and cross tees that are not attached to wall molding.
- G. Hanger Wire: 0.106 inch diameter (0.144 inch diameter for pendant fixtures), galvanized soft annealed mild steel wire as defined in ASTM A641, Class 1 coating.
- H. Provide attachment devices and any other required accessories for a complete suspended ceiling system installation.

2.03 ACOUSTICAL CEILING PANELS

- A. Acoustical ceiling panels shall be class A in accordance to ASTM E1264.
- B. Acoustical panels shall meet the following surface-burning characteristics when tested in accordance to ASTM E84 for Class A materials:
 - 1. Maximum Flame Spread: 25.
 - 2. Maximum Smoke Developed: 50.
- C. Mold and Mildew Resistance: Panels and faces shall be treated with a biocide paint additive or an antimicrobial solution to inhibit mold and mildew.

2.04 CEILING TYPES

- A. ACT 1:
 - 1. Acoustical Ceiling Panels:
 - a. Panel Name: Armstrong Fine Fissured High NRC 1811, USG Radar Climaplus HiNRC 22311, CertainTeed Fine Fissured HHF 497 HNRC, or equal.
 - b. Panel Size: 2-foot by 4-foot.
 - c. Panel Thickness: 3/4 inch.
 - d. Edge Detail: Lay-in.
 - e. Light Reflectance: 0.83 minimum, complying with ASTM E1477.
 - f. CAC: Minimum 35 - 39, UL Classified, complying with ASTM E1414.
 - g. NRC: Minimum 0.70, UL Classified, complying with ASTM C423.
 - h. Color: White.
 - i. Recycled Content: Minimum 37 percent.

2. Suspension System:

- a. Suspension System Name: Prelude XL by Armstrong, Donn DX by USG, 1200 Seismic Series by Chicago Metallic Corporation, or equal.
- b. Color: White.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Furnish layouts for inserts, clips or other supports and struts required to be installed by the Work of other trades that depend on the suspended ceiling system for support.
- B. Coordinate related Work to ensure completion prior to installation of clips or fasteners.
- C. Compare layouts with construction conditions. Tile shall be spaced symmetrically about the centerlines of the room or space, and shall start with a tile or joint line as required to avoid narrow tiles at the finish edges unless indicated otherwise. Joints shall be tight with joint lines straight and aligned with the walls. Ceiling moldings shall be provided where tile abuts wall with matching caulking to eliminate any space.

3.02 INSTALLATION OF SUSPENSION SYSTEMS

A. General:

1. Install suspension system in accordance with ASTM C636 and ASTM E580.
2. System shall be complete; with joints neatly and tightly joined and securely fastened; suspension members shall be installed in a true, flat, level plane.
3. Hanger Wires: 0.106 inch diameter minimum; larger sizes as indicated or required.
 - a. Fasten wires to panel points and structure above per most stringent requirements of fabricator and CBC and as indicated on Drawings.
 - b. Wires exceeding 1:6 out-of-plumb shall be braced with counter-sloping wires.
 - c. Maintain wires at least 6 inches from non-braced ducts, pipes, conduits, and other items.
 - d. Install wire along main runners at 4 feet on center. Terminal ends of each main runner and cross tee must be supported within 8 inches of each wall with a perimeter wire or within one-fourth (1/4) of the length of the end tee, whichever is least, for the perimeter of the ceiling area.
 - e. Where obstructions prevent direct suspension, provide trapezes or equivalent devices; 1 1/2-inch minimum cold rolled channels back to back may be installed for spans to 6 feet maximum.
 - f. Wire shall be straight, without extraneous kinks or bend. Hanger wire connections must be capable of carrying a 200 - pound pull without stretching or shifting the suspension clip.

4. Bracing Wires to Resist Seismic Forces: 0.106 inch diameter minimum, larger sizes as indicated or required.
 - a. System for Bracing Ceilings: Lay-In Ceiling Systems: Install one four-wire set of sway-bracing wires and a vertical strut for each 144 square feet maximum of ceiling area. Locate wire-sets and struts at 12 feet maximum on center. At ceiling perimeters, wire-sets shall be installed within 6 feet of walls.
 - b. Install four-wire sets and struts within 2 inches of cross-runner intersection with main runner; space wires 90 degrees from each other.
 - c. Do not install sway bracing wires at an angle greater than 45 degrees with the ceiling plane.
 - d. Wires shall be tight, without causing ceiling to lift.
 - e. Fasten struts in accordance with CBC requirements.
 - f. Maintain wires at least 6 inches from non-braced ducts, pipes, conduit, and other items.
 5. Provide additional wires, 0.106 inch diameter minimum, necessary to properly support suspension at electrical devices, air distribution devices, vertical soffits, and other concentrated loads.
 6. Suspension:
 - a. Suspension members shall be fastened to two adjacent walls per ASTM 580; but shall be at least 3/4 inches minimum clear of other walls.
 - b. Any suspension members not fastened to walls shall be interconnected to prevent spreading, near their free end, with a horizontal metal strut or stabilizer bar or 0.064 inch diameter taut tie wire.
 - c. Provide additional tees or sub-tees to frame openings for lights, air distribution devices, electrical devices, and other items penetrating through ceiling, which do not have an integral flange to support and conceal cut edges of acoustic panels. Provide cross bracing necessary to securely support any surface mounted fixtures or other items.
 7. Attachment of Wires:
 - a. To Metal Deck or Steel Framing Members: Install as required by current code.
 - b. To Suspension Members: Insert through holes in members or supporting clips.
 - c. Wires shall be fastened with three tight turns minimum for hanger wires and four tight turns minimum bracing wires. Turns shall be made in a 1 1/2-inch maximum distance.
- B. Suspension System for 2-foot by 4-foot Lay-in Acoustical Ceilings:

1. Main Runners: Install main runners 48 inches apart; 0.106 inch diameter hanger wires space 48 inches on center maximum along runners, and within 8 inches of ends.
2. Install wall moldings with fasteners to studs. Install corner caps at molding intersections.
3. Cross-Tees: Install between main runners in a repetitive pattern of 2-foot spacings.
4. Sub-Tees: Install at edges of penetrations.

3.03 INSTALLATION OF ACOUSTICAL PANELS

- A. Install panels into suspension system. Partial panels shall be neatly cut and fitted to suspension and around penetrations and/or obstructions. Duplicate tegular edges at partial panels; cuts to be straight. Repaint cut tiles to match color or as directed by manufacturer for mylar facing at visually exposed conditions or as required by the Architect.
- B. Penetrations through the ceilings for 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 adapter through the ceiling tile to allow free movement of one inch in horizontal directions. Alternatively per ASTM E580, a flexible sprinkler hose fitting that can accommodate one inch of ceiling movement shall be permitted to be used in lieu of the oversized ring, sleeve or adapter.

3.04 AIR DISTRIBUTION DEVICES

- A. Refer to and coordinate with Division 23 - HVAC.
- B. Install air distribution grilles and other devices into suspension system. Install 4 taut wires, each 0.106 inch diameter minimum, to each device within 3 inches of device corners, to support their weight independent of the suspension system.

3.05 LIGHT FIXTURES

- A. Refer to and coordinate with Division 26 - Electrical.
- B. Fixtures weighing less than 56 pounds: Install fixtures into suspension systems and fasten earthquake clips to suspension members. Install minimum 2 slack safety wires, each 0.106 inch diameter minimum, to each fixture at diagonally opposite corners, to support their weight independent of the system.
- C. Fixtures weighing 56 Pounds or more: Install fixtures into suspension system and fasten earthquake clips to suspension system members as required by the Drawings and/or code. Install not less than 4 taut 0.106 inch diameter wires capable of supporting four times the fixture load.
- D. Support pendant-mounted light fixtures directly from the structure above with hanger wires or cables passing through each pendant hanger and capable of supporting two times the weight of the fixture. Brace the pendant-mounted light fixtures by either a bracing assembly at the ceiling penetration or below the ceiling to the walls, as indicated in the drawings.

111001

3.06 CLEANING

- A. General: After installation of acoustical material has been completed, clean surfaces of the material, removing any dirt or discolorations. Replace panels as required.
- B. Acoustical Panels: Minor abraded spots and cut edges shall be touched up with the same paint as was used for factory applied finish of the lay-in panels.
- C. Remove and replace work that can not be successfully cleaned and repaired to eliminate evidence of damage.

3.07 CLEAN UP

- A. Remove rubbish, debris, and waste materials and legally dispose off of the Project site.

3.08 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 5123

ACOUSTICAL TILE CEILINGS

1.1 SUMMARY

- A. Acoustical tiles directly attached to substrates with adhesive.

1.2 QUALITY ASSURANCE

- A. Mockups for each form of construction.

1.3 PRODUCTS

- A. Ceiling assemblies complying with low-emitting material requirements for LEED for Schools.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide Armstrong #257 Sand Pebble 12" x 12" tile or comparable product by one of the following:
 - 1. CertainTeed Corp.
 - 2. USG Interiors, Inc.; Subsidiary of USG Corporation.
- C. Metal Edge Moldings and Trim: Extruded aluminum.
- D. Acoustical Sealants: Low VOC emitting.
- E. Installation Adhesive: Henry 237 low VOC or equal, Class 0-25 flame spread.

1.4 INSTALLATION

- A. Installation: ASTM C 636.

1.5 INSTALLATION OF DIRECTLY ATTACHED ACOUSTICAL TILE CEILINGS

- A. Adhesive Installation: Install acoustical tile by bonding to substrate, using amount of acoustical tile adhesive and procedure recommended in writing by tile manufacturer and as follows:
 - 1. Prime ceiling according to CISCA's "Ceiling Systems Handbook."
 - 2. Remove loose dust from backs of tiles by brushing.

3. Install splines in joints between tiles; maintain level of bottom surface of tiles to a tolerance of 1/8 inch in 12 feet (3 mm in 3.6 m) and not exceeding 1/4 inch (6.35 mm) cumulatively.
 4. Maintain tight butt joints, aligned in both directions and coordinated with ceiling fixtures.
- B. Install edge moldings and trim of type indicated at perimeter of acoustical tile ceiling area and where necessary to conceal edges of acoustical units.

1.6 CLEANING

- A. Clean exposed surfaces of acoustical tile ceilings, including trim and edge moldings. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace tiles and other ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

SECTION 09 6513

RUBBER BASE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Topset coved rubber base for installation with surface flooring.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 09 6523 – Luxury Vinyl Tile.

1.02 SUBMITTALS

- A. Product Data: Submit manufacturer's published technical data describing materials, construction and recommended installation instructions. Submit technical data and installation instructions for each adhesive material.

- B. Maintenance Instructions: Submit manufacturer's recommendations for maintenance, care and cleaning of base.

- C. Samples: Submit Samples of top set base in each available color. Following color selections, submit Samples, not less than 12 inches long of each selected color and type. Submit pint cans of each type adhesive.

- D. Maintenance Materials: Before Substantial Completion, deliver at least 50 lineal feet and five outside corner units of each color of rubber base installed. Deliver the materials in unopened factory containers or in sealed cartons with labels identifying the contents, matching installed materials. Include unopened cans of adhesives adequate to install the maintenance materials.

1.03 QUALITY ASSURANCE

- A. Qualifications of Installer: Minimum five years experience in successfully installing the same or similar flooring materials.

B. Comply with the following as a minimum requirement:

1. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM F1861: Standard Specification for Resilient Wall Base.
5. Each selected color and configuration shall be from same dye lot and color.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the Project site in original unopened manufacturer's packaging clearly labeled with manufacturer's name. Store materials at room temperature, but not less than 70 degrees F, for a minimum of 48 hours before installation, unless otherwise indicated in manufacturer's printed instructions.

1.05 PROJECT CONDITIONS

- A. Ventilation and Temperature: Verify areas that are to receive rubber base are ventilated to remove fumes from installation materials, and areas are within temperature range recommended by the various material manufactures for site installation conditions.

1.06 WARRANTY

- A. Manufacturer shall provide a five year material warranty.
- B. Installer shall provide a two year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Burke/Mercer Wall Base.
- B. Roppe, Pinnacle Rubber Base.
- C. Flexco Company, Wallflower Premium Rubber Wall Base.
- D. Johnsonite.
- E. Equal.

2.02 MATERIALS

- A. Rubber base: Conform to ASTM F 861; Group 2, solid (homogeneous); Type 1, TS, (thermoset) vulcanized rubber, Style A, 4-inch high unless otherwise indicated, integral colors as selected, non-shrinking, 1/8 inch thick, with matching molded outside corners.
- B. Base Adhesive: Water based, low odor type, as recommended by manufacturer of rubber base.

PART 3 - EXECUTION

3.01 COORDINATION

- A. Coordinate the Work of this section with other sections to provide a level, smooth and clean finish surfaces to receive rubber base.

3.02 EXAMINATION

- A. Field verify dimensions and other conditions affecting the Work of this section before commencing the Work of this section.
- B. Before Work is started, examine surfaces that are to receive rubber base. Deficiencies shall be corrected before starting the Work of this section.

3.03 PREPARATION

- A. Do not start preparation until adjacent concrete floor slabs are at least 90 days old and finish flooring is installed.
- B. Install rubber base when ambient temperature is 70 degrees F. or higher.

3.04 INSTALLATION

- A. Install top set base at hard floors, including resilient flooring, concrete and wood, carpet and other soft floors.
- B. Securely fasten cement base to backing in long lengths in accordance with manufacturer's recommendations. Lay out lengths so that not less than 18 inches long filler pieces are provided. Assure that top and toe continuously contact the wall and floor, and that all joints are tight. Install matching factory formed external corners at all offsets. Inside corners shall be coped; wrapped corners are not acceptable.
- C. Use of adhesive gun is prohibited. Apply adhesive directly to substrate using the appropriate notched trowel or spreader according to manufacturer's instructions. Maintain 1/8 inch gap from top of base to prevent adhesive oozing onto adjacent surfaces.
- D. Base and outside corners shall be rolled with a seam roller before adhesive sets.

3.05 CLEANING

- A. Maintain surfaces of base clean as installation progresses. Clean rubber base when sufficiently seated and remove foreign substances.
- B. Clean adjacent surfaces of adhesive or other defacement. Replace damaged and/or defective Work to the specified condition.

3.06 CLEAN UP

- A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

140729

3.07 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 6523

LUXURY VINYL TILE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Luxury vinyl tile flooring as indicated.

B. Related Requirements:

1. Division 01 - General Requirements.
2. Section 09 0561 - Moisture Testing for Flooring Installation.
3. Section 09 6513 - Rubber Base.

1.02 DEFINITIONS

- A. Pop-up: A pop-up is defined as any surface deviation or looseness of substrate that is equal to or greater than 1/64 (0.015625) inch above the concrete floor level, regardless of the size.

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's published technical data describing materials, construction and recommended installation instructions. Submit technical data and installation instructions for each adhesive material. Submit list and Product Data of recommended finish materials.
- B. Maintenance Instructions: Submit manufacturer's recommendations for maintenance, care, and cleaning of luxury vinyl tile.
- C. Samples: Submit Samples of luxury vinyl tile and any reducers or transitions in each available color and pattern. Following color selections, submit full size samples of each selected color and pattern. Submit pint cans of each type of adhesive.
- D. Maintenance Materials: Before Substantial Completion, deliver one unopened container of each color and pattern of luxury vinyl tile in each color and pattern installed. Label each container indicating locations installed. Include unopened cans of adhesives adequate to install the maintenance materials.
- E. Installer's Experience Qualifications: Submit list of not less than five projects, extending over period of not less than five years, indicating installer's experience record. Submit letter from manufacturer indicating manufacturer's approval for installer of the products.

1.04 QUALITY ASSURANCE

- A. Qualifications of Installer: Minimum five years' experience in successfully installing the same or similar flooring materials.
- B. Qualifications of Supervising Installer: In addition to the qualifications of the installer listed above, the flooring installer's supervisor shall have a minimum of 10 hours Cal-OSHA safety training.
- C. Pre-Installation and Progress meetings: Prior to start of work of this section and after approval of submittals, schedule on-site meetings between Contractor, Supervising Installer, OAR and Project Inspector to review installation and procedures required for project.
- D. Comply with the following as a minimum requirement:
 - 1. Materials shall be compliant with requirements of CBC Chapter 11B and ADAAG.
 - 2. ASTM E84: Class A Flame Spread Rating of 25 or less.
 - 3. Moisture Testing: ASTM F1869 and ASTM F2170.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the Project site in original unopened manufacturer's packaging clearly labeled with manufacturer's name.
- B. Materials shall be stored at room temperature, but not less than 70 degrees F for not less than 48 hours before installation, unless manufacturer's instructions specify otherwise.

1.06 PROJECT CONDITIONS

- A. Ventilation and Temperature: Verify areas that are to receive new flooring are ventilated to remove fumes from installation materials. Verify that areas are within temperature range recommended by the various material manufactures for Project site installation conditions.

1.07 WARRANTY

- A. Manufacturer shall provide a twenty year wear material warranty.
- B. Installer shall provide a five year fabrication and installation warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Shaw industries, Inc.
- B. Tandus Centiva
- C. InterfaceFLOR
- D. Karndean
- E. Armstrong
- F. Or equal.

2.02 MATERIALS

- A. Luxury Vinyl Tile: Conform to ASTM F1700, Class III (printed film vinyl), type A, 4-inch by 24-inch up to 18-inch by 48-inch by minimum 2.5 mm thick, colors and patterns as indicated on Drawings. Minimum of 20 mil wear layer
- B. Crack Filler and Leveling Compound: 100 percent cementitious binder type (as defined by ASTM C150). Leveling Compound shall meet or exceed 200 pounds when tested in accordance with ASTM C 1583.
- C. Interlocking floating glue free installation.
- D. Reducer Strips: Tapered rubber not less than one inch wide, and thickness to match tile.

PART 3 - EXECUTION

3.01 TESTING

- A. Refer to Section 09 0561 - Moisture Testing for Flooring Installation.

3.02 COORDINATION

- A. Coordinate with related Work to assure level, dry, smooth, and clean finish surfaces to receive luxury vinyl floor tile.

3.06 INSTALLATION OF TILE

- A. Color and pattern: Install tiles in the pattern indicated on Drawings. If no pattern is indicated, tiles shall be installed in a rectangular pattern, in one color.
- B. Special designs and school logo:
 - 1. Fabricate of sizes and colors indicated on drawings and from electronic file provided by Architect.

2. Precision cut LVT tiles using either computer aided water-jet or laser technologies to a tolerance of 0.005 inch.
- C. Install luxury vinyl floor tile when ambient temperature is 70 degrees F or higher or manufacturer's range.
 - D. Install the tile adhesive in a thin film evenly with a notched trowel. Trowel notches shall be as recommended by adhesive manufacturer.
 1. Mix adhesive in accordance with manufacturer's instructions.
 2. Install adhesive only in area that can be covered by flooring material within the adhesive manufacture's recommended working time. Adhesive application rate shall be as required to avoid telegraphing trowel lines to the surface after maintenance coatings are applied. Adjust tile runoff during installation if necessary.
 3. Immediately remove any excess adhesive from the tile surface using the adhesive manufacturer's recommended cleaner and a damp, not wet, cloth.
 - E. Provide reducer where floor covering edges are exposed, such as at center of the door or where floor coverings terminate.
 - F. Install tiles symmetrically about centerlines of areas progressing toward walls. Adjust border tiles to be even on all walls or nothing smaller than a 3" piece. Tiles shall be straight and joints close. Tile shall be cut to fit snug door jambs casing, pipes fixtures and walls. No slivers at edges.
 - G. Mechanically cut flooring material to produce square true edges.
 - H. As floor tile is installed and within adhesive's recommended working time, roll with a clean, smooth, 100-pound roller in both directions. As the rolling proceeds, replace any loosened, defective, or damaged tile with new and finish to the specified condition.
 - I. Remove dust, debris, and soil with any combination of sweeping, micro-fiber dust-mopping with a properly treated, non-oily mop and vacuuming.

3.07 CLEANING, NO WAXING, AND COMPLETION

- A. Maintain flooring surfaces clean as installation progresses.
- B. Use a sprayer to mist the area to be cleaned with a neutral cleaning solution prepared in accordance with manufacturer's instructions.
- C. Gently scrub the floor using red or maroon cleaning, not stripping pads, mounted on a single disc, 175 RPM floor machine; or preferably, with a machine that uses horizontally mounted brushes with a counter-rotating spindle motion. Never allow the machine to remain running stationary.
- D. Remove the resulting slurry with a wet vacuum.

- E. Rinse the floor at least four times, each time using a clean mop and clean rinse water. On the first rinse, apply just enough water to keep the floor wet until the solution is picked-up with a vacuum. The next two rinses should be with a fairly well wrung-out, damp mop. The final rinse should produce virtually clean rinse water. Ensure the rinse water is clean throughout the rinsing process. Avoid tracking the floor after the final rinse. Check the floor after the final rinse for any missed areas and re-scrub/rinse as needed. Repeat the rinsing process until all signs of the cleaning solution are removed and the floor shows no sign of haziness or dusting when dry. If the Contractor has lightweight “automatic” floor machines capable of achieving the same result as described above, they may be used in-place of this method. Do not flood or excessively dampen floor at any time.
- F. Allow the Work to dry thoroughly.
- G. Clean adjacent baseboard and other surfaces of adhesive and other materials. Replace damaged or defective Work to the specified condition.

3.08 CLEAN UP

- A. Remove rubbish, debris, and waste materials and legally dispose of off Project site.

3.09 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 8100
ACOUSTICAL INSULATION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Acoustical insulation and sealants.
- B. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 2. Section 07 2100 - Thermal Insulation.
 - 3. Section 09 2216 - Non-Structural Metal Framing.

1.02 SUBMITTALS

- A. Product Data:
 - 1. Provide manufacturer's printed Product Data for each product.
 - 2. Provide manufacturer's printed installation instructions.

1.03 QUALITY ASSURANCE

- A. Fire Ratings: Comply with fire-resistance and flammability ratings specified.
- B. Acoustic Performance: Acoustic Insulation shall be tested in accordance to ASTM C423, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method, with Type A (#4) mounting.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation from physical damage and from becoming wet or soiled.
- B. Comply with manufacturer's recommendations for handling, storage and protection during installation.

PART 2 - PRODUCTS

2.01 ACOUSTICAL INSULATION

- A. Unfaced Mineral/Glass Fiber Blanket/Batt Acoustical Insulation: Acoustical insulation produced by combining mineral/glass fibers with thermosetting resins to comply with ASTM C665, Type I.
1. Surface Burning Characteristics: Maximum flame spread and smoke developed values of 25 and 50 when tested in accordance with ASTM E84.
 2. Manufacturers: Johns Manville "Sound Control Batts", Owens Corning "Sound Attenuation Batts", or equal.
 3. Thickness: 3-inch unless otherwise indicated.

2.02 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Concealed Joints: Non-drying, non-hardening, non-skinning, non-staining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound:
1. Pecora Corp. "BA-98".
 2. Tremco Inc. "Tremco Acoustical Sealant".
 3. Hilti, Inc. "CP 506".
 4. Equal.
- B. Acoustical Sealant for Exposed Joints: Non-oxidizing, skinnable, paintable, gunnable sealant recommended for sealing interior exposed joints to reduce transmission of airborne sound.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Comply with manufacturer's instructions for installation conditions.
- B. Do not install insulation until building is sufficiently enclosed or protected against absorption of moisture by the insulation, and do not install insulation unless supporting framing and construction is in a thoroughly dry condition.
- C. Install snugly between framing members with ends snugly fitted between units and against adjacent construction.
- D. Carefully cut and fit insulation around pipes, conduit, and other obstructions and penetrations.
- E. Where door and window frames occur in framing; cut additional strips of insulation and hand-pack as required to fill voids in and around such frames.

111001

- F. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C919 for use of joint sealants in acoustical applications as applicable to materials, applications and conditions indicated. Install sealants in accordance with manufacturer's instructions.

3.02 CLEANUP

- A. Remove rubbish, debris and waste materials and legally dispose off of Project site.

3.03 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 09 9000

PAINTING AND COATING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Interior and exterior painting.

B. Following items shall not be painted:

1. Brass valves, chromium or nickel-plated piping and fittings.
2. Boiler control panels and control systems.
3. Fabric connections to fans.
4. Flexible conduit connections to equipment, miscellaneous name plates, stamping, and instruction labels and manufacturer's data.
5. Mechanical and electrical utility lines, piping and heating and ventilation ductwork in tunnels, under-floor excavated areas or crawl spaces, attic spaces and enclosed utility spaces.
6. Flag, floodlight, parking light poles and loudspeaker poles, metal stairs, handrails and chain-link fence with a galvanized finish, unless otherwise noted.
7. Structural and miscellaneous steel, open web steel joists and metal floor decking, which will not be exposed in final construction, shall have no finish other than one coat of shop primer.
8. Hardboard covering on tops and backs of counters and benches.
9. Brass, bronze, aluminum, lead, stainless steel and chrome or nickel-plated surfaces.
10. Non-metallic walking surfaces unless specifically shown or specified to be painted.

1.02 REGULATORY REQUIREMENTS

- A. Paint materials shall comply with the Food and Drug Administration's (F.D.A.) Lead Law and the current rules and regulations of local, state and federal agencies governing the use of paint materials.

1.03 SUBMITTALS

- A. List of Materials: Before submittal of samples, submit a complete list of proposed paint materials, identifying each material by distributor's name, manufacturer's name, product name and number, including primers, thinners, and coloring agents, together with manufacturers' catalog data fully describing each material as to contents, recommended installation, and preparation methods. Identify surfaces to receive various paint materials.
- B. Material Samples: Submit manufacturer's standard colors samples for each type of paint specified. Once colors have been selected, submit Samples of each color selected for each type of paint accordingly:
 - 1. Samples of Paint and Enamel must be submitted on standard 8 ½" x 11" Leneta Opacity-Display Charts. Each display chart shall have the color in full coverage. The sample shall be prepared from the material to be installed on the Work. Identify the school on which the paint is to be installed, the batch number, the color number, the type of material, and the name of the manufacturer.
 - 2. Elastomeric shall be submitted in duplicate samples of the texture coating. Samples will be not less than 2 ½ by 3 ½ in size and installed upon backing. Finished Work will match the reviewed Sample in texture.
 - 3. Materials and color samples shall be reviewed before starting any painting.
- C. For transparent and stained finishes, prepare samples on same species and quality of wood to be installed in the Work, with written description of system used.

1.04 QUALITY ASSURANCE

- A. Certification of Materials: With every delivery of paint materials, the manufacturer shall provide written certification the materials comply with the requirements of this section.
- B. Coats: The number of coats specified is the minimum number. If full coverage is not obtained with the specified number of coats, install additional coats as required to provide the required finish.
- C. Install coats and undercoats for finishes in strict accordance with the recommendations of the paint manufacturer as reviewed by the Architect.
- D. Paint materials shall comply with the following as a minimum requirement:
 - 1. Materials shall be delivered to Project site in original unbroken containers bearing manufacturer's name, brand number and batch number.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Storage and Mixing of Materials: Store materials and mix only in spaces suitable for such purposes. Maintain spaces clean and provide necessary precautions to prevent fire. Store paint containers so the manufacturer's labels are clearly displayed.

1.06 SITE CONDITIONS

- A. Temperature: Do not install exterior paint in damp, rainy weather or until surface has thoroughly dried from effects of such weather. Do not install paint, interior, or exterior, when temperature is below 50 degrees F, or above 90 degrees F, or dust conditions are unfavorable for installation.

1.07 WARRANTY

- A. Manufacturer shall provide a three year material warranty.
- B. Installer shall provide a three year application warranty.

1.08 MAINTENANCE

- A. Provide at least one gallon of each type, color and sheen of paint coating installed. Label containers with color designation indicated on Drawings.

PART 2 - PRODUCTS

2.01 PAINT MATERIALS

- A. Furnish the products of only one paint manufacturer unless otherwise specified or required. Primers, intermediate and finish coats of each painting system must all be the products of the same manufacturer, including thinners and coloring agents, except for materials furnished with shop prime coat by other trades.
- B. Factory mix paint materials to correct color, gloss, and consistency for installation to the maximum extent feasible.
- C. Paint materials to be minimum "Architectural Grade".
- D. Gloss degree standards shall be as follows:

HIGH GLOSS	70 and above	EGGSHELL	30 to 47
SEMI-GLOSS	48 to 69	SATIN	15 to 29

2.02 MANUFACTURERS

- A. Acceptable manufacturers, unless otherwise noted:
 - 1. Dunn-Edwards Corporation Paints
 - 2. Frazee Paints and Wall coverings

3. Vista Paints
 4. Sherwin Williams
 5. ICI Paints
 6. Equal.
- B. Anti-Graffiti Coating: Per Section 09 9623 Graffiti-Resistant Coatings.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Examine surfaces to receive paint finish. Surfaces which are not properly prepared and cleaned or which are not in condition to receive the finish specified shall be corrected before prime coat is installed.
- B. New woodwork shall be thoroughly cleaned, hand sandpapered, and dusted off. Nail holes, cracks or defects in Work shall be filled. On stained woodwork, fill shall be colored to match stain. Filling shall be performed after the first coat of paint, shellac or varnish has been installed.
- C. Plaster surfaces except veneer plaster shall be allowed to dry at least 3 weeks before painting. Veneer plaster shall be allowed to dry sufficiently to receive paint as determined by moisture meter tests.
- D. Metal surfaces to be painted shall be thoroughly cleaned of rust, corrosion, oil, foreign materials, blisters, and loose paint.
- E. Do not install painting materials to wet, damp, dusty, dirty, finger marked, rough, unfinished or defective surfaces.
- F. Concrete surfaces shall be dry, cleaned of dirt and foreign materials and in proper condition to receive paint. Neutralize spots demonstrating effects of alkali.
- G. Mask off areas where necessary.

3.02 APPLICATION

- A. Backpainting: Immediately upon delivery to the Project site, finish lumber and millwork shall be backpainted on surfaces that will be concealed after installation. Items to be painted shall be backpainted with priming coat specified under "Priming".
- B. Priming: New wood and metal surfaces specified to receive paint finish shall be primed. Surfaces of miscellaneous metal and steel not embedded in concrete, and surfaces of unprimed plain sheet metal Work shall be primed immediately upon delivery to the Project site. Galvanized metal Work and interior and exterior woodwork shall be primed immediately after installation. Priming of surfaces and priming coat shall be as follows:

1. Knots, Pitch and Sap Pockets: Shellac before priming.
 2. Exterior Woodwork and Wood Doors: Prime with one coat of exterior waterborne emulsion wood primer.
 3. Interior Woodwork: Where indicated to be painted, prime with one coat of waterborne wood primer.
 4. Stain: Woodwork indicated to receive a stain and varnish finish shall be stained to an even color with water borne stain. On open-grained hardwood, mix stain with paste filler and completely fill pores in wood.
 5. Galvanized Metal Work: Clean oil, grease and other foreign materials from surfaces. Install vinyl wash pretreatment coating. Follow manufacturer's instructions for drying time, and then prime with one coat of metal primer.
 6. Unprimed Iron, Steel, and Other Uncoated Metals: Where specified to be painted, prime with one coat of metal primer.
 7. Shop Primed Metal Items: Touch up bare and abraded areas with metal primer before installation of second and third coats.
 8. Coats shall be installed evenly and with full coverage. Finished surfaces shall be free of sags, runs and other imperfections.
- C. Allow at least 24 hours between coats of paint.
- D. Rollers shall not be used on wood surfaces.
- E. Each coat of painted woodwork and metal, except last coat, shall be sandpapered smooth when dry. Texture-coated gypsum board shall be sanded lightly to remove surface imperfections after first coat of paint has been installed.
- F. Each coat of paint or enamel shall be a slightly different tint as required. Each coat of paint, enamel, stain, shellac, and varnish will be inspected by the IOR before next coat is applied. Notify the Project Inspector that such Work is ready for inspection.
1. Tinting Guideline: The first coat, primer/undercoat(s) to be untinted or tinted up to 50 percent lighter or darker (at the discretion of the installer) than the finish coat. The second coat (or third coat if a seal coat and undercoat have been specified) is to be factory tinted in the range of 10 percent to 15 percent lighter or darker (at the discretion of the installer) than the finish coat. The final coat is to be factory tinted to the required color selected. These tinting guidelines shall be provided on all surfaces receiving paint.
- G. Do not "paint-out" UL labels, fusible links and identification stamps.
- H. Paint Roller, brush and spray.
1. Only Paint rollers shall be used on interior plaster, drywall, masonry/plaster and plywood surfaces, nap shall not exceed one half inch in length.

2. First coat on wood overhang and ceilings shall have material applied by roller and then brushed out in a professional manner to leave surface free of imperfections. Finish coat may be sprayed.
 3. Other surfaces shall have all coatings applied with brushes of proper size.
 4. Spray work is permitted only on radiators, acoustic plaster, masonry and plaster.
- I. Where ceilings are specified to be painted, beams, cornices, coves, ornamental features, plaster grilles, etc. shall be included.
 - J. Ceilings shall be white, including classrooms, storage rooms, offices, arcades, etc. Boiler room and fan room ceiling color shall match adjacent walls.

3.03 CLEANING

- A. Remove rubbish, waste, and surplus material and clean woodwork, hardware, floors, and other adjacent Work.
- B. Remove paint, varnish and brush marks from glazing material and, upon completion of painting Work, wash and polish glazing material both sides. Glazing material, which is damaged, shall be removed and replaced with new material.
- C. Clean hardware and other unpainted metal surfaces with recommended cleaner. Do not furnish abrasives or edged tools.

3.04 SCHEDULE

- A. Interior:
 1. Woodwork, Painted: 3 coats.
 - a. First Coat: As specified in this section under Priming.
 - b. Second and Third Coats: Interior enamel, semi-gloss or gloss as indicated.
 2. Woodwork, Stained and Varnished: 4 coats.
 - a. First Coat: As specified in this section under Priming.
 - b. Second, Third and Fourth Coats: Varnish, semi-gloss.
 3. Wood Corridor doors: 4 coats.
 - a. First Coat: As specified in this section under Priming.
 - b. Second, Third, and Fourth Coats: Varnish, gloss.
 4. Other Wood Doors: 4 coats.

- a. Varnished or painted as indicated.
 - b. If varnished, same finish system as painted woodwork, with semi-gloss or gloss finish to match adjacent wall.
5. Miscellaneous Woodwork: 4 coats. Wood items including, but not limited to: stair treads and risers, handrails, rolling ladders, wood base and shoe, chair rails, counter tops and locker room benches.
 - a. First Coat: As specified in this section under Priming.
 - b. Second, Third and Fourth: Exterior varnish, gloss.
6. Casework: Interior surfaces of casework (except plastic laminate-faced casework) including top, edges and underside of shelving, poles, surfaces of drawers (except fronts), interior surfaces of mailbox pigeonholes, and particle board.
 - a. First Coat: Waterborne stain.
 - b. Second and Third Coats: Satin varnish.
7. Plaster: 4 coats.
 - a. First Coats: Pigmented wall sealer.
 - b. Second coat: Enamel under coater.
 - c. Third and Fourth Coats – Interior enamel, semi-gloss or gloss as indicated.
8. Gypsum Board: 4 coats.
 - a. First Coat: Drywall sealer.
 - b. Second Coat: Enamel under coater.
 - c. Third and Fourth Coats: Interior enamel, semi-gloss or gloss as indicated.
9. Concrete: 3 coats.
 - a. First: Concrete sealer.
 - b. Second and Third: Interior enamel, semi-gloss or gloss as indicated.
10. Concrete Block: 3 coats.
 - a. First: Concrete block filler.
 - b. Second and Third: Interior enamel, semi-gloss or gloss as indicated.

11. Metal: Shall be cleaned, pre-treated and painted with 3 coats. Items to be painted include, but are not limited to: exposed structural and miscellaneous steel, metal doors and frames, ladders, table and bench legs.
 - a. First Coat: Metal primer.
 - b. Second and Third Coats: Interior gloss enamel, except metal doors and frames which shall be semi-gloss or gloss to match adjacent wall.

B. Exterior:

1. Woodwork: 3 coats.
 - a. First Coat: As specified in this section under Priming.
 - b. Second and Third Coats: Exterior house and trim enamel.
2. Wood Doors: 3 coats.
 - a. First Coat: As specified in this section under Priming.
 - b. Second and Third Coats: Exterior gloss enamel.
3. Plaster and Stucco: 3 coats. Flat 100 percent acrylic.
 - a. Prime Coat: Alkali resistant primer/sealer.
 - b. Exterior 100 percent acrylic.
4. Concrete: 3 coats. Flat 100 percent acrylic.
 - a. First Coat: Concrete sealer.
 - b. Second and Third Coats: Exterior 100 percent acrylic.
5. Concrete Block: 3 coats. Flat 100 percent acrylic.
 - a. First Coat: Concrete block filler.
 - b. Second and Third Coats: Exterior 100 percent acrylic.
6. Metal: 3 coats. Shall be cleaned and pre-treated. Items to be painted include, but are not limited to: steel columns and miscellaneous steel items, gravel stops, metal doors and frames, hoods and flashings.
 - a. First Coat: As specified in this section under Priming.
 - b. Second and Third Coats: Exterior gloss enamel.

C. Mechanical and Electrical Work:

1. Except where interior mechanical and electrical Work to be painted is specified to receive another paint finish, Work occurring in finished rooms and spaces shall be cleaned, pre-treated, and painted with 3 coats. Items to be painted include, but are not limited to: steel and copper piping, pipes, vents, fittings, ducts, plenums, miscellaneous supports and hangers, electrical conduit, fittings, pull boxes, outlet boxes, unfinished surfaces of plumbing fixtures, miscellaneous metal cabinets, panels, and access doors and panels.
 - a. First Coat: As specified in this section under Priming.
 - b. Second and Third Coats: Interior enamel, semi-gloss or gloss to match adjacent wall or ceiling finish.
2. Insulation and Taping on Pipes and Ducts: 3 coats.
 - a. Finished Rooms:
 - 1) First Coat: Interior waterborne primer.
 - 2) Second and Third Coats: Interior semi-gloss or gloss enamel to match adjoining wall or ceiling finish.
 - b. Building Exterior:
 - 1) First Coat: Exterior waterborne primer.
 - 2) Second and Third Coats: Exterior gloss enamel.
3. Inside surfaces of ducts, vents, dampers and louvers as far back as visible from room in which they open shall be painted with 2 coats of flat black paint.

3.05 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

3.06 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

END OF SECTION

SECTION 09 9623

GRAFFITI-RESISTANT COATINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. Work includes anti-graffiti coating.
- B. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 2. Section 09 9000: Painting and Coating.

1.02 SUBMITTALS

- A. Provide submittals in accordance with Division 01.
- B. Samples: Submit Samples of coating system.
- C. Product Data: Submit anti-graffiti coating manufacturer's technical data and installation instructions, recommended coverage rates for types of surfaces to be treated, and evidence that coatings conform to requirements specified. Submit evidence of code approvals.
- D. Furnish Samples on the same materials to which coating will be applied on. Indicate satin or flat finish. Coat one-half of each Sample, with the other half non-coated.
- E. Installer: Submit written evidence the installer for the Work of this section has completed at least five projects of similar complexity within the past five years.
- F. Certificate and Summary Statement: Before Substantial Completion, submit a certificate stating that coatings applied conform to reviewed submittals and specified requirements. Provide a summary statement setting forth the following:
 - 1. Number of square feet of each surface treated with coating, classified as to the kind of material treated, open pore or closed pore type, and whether vertical or horizontal.
 - 2. The number of gallons of each type, class, or grade of coating required to treat involved surfaces, based on the number of square feet of each type and orientation of the material the coating was installed on.
 - 3. Total gallons of each coating type, class, or grade installed.
- G. Maintenance Instructions: Furnish manufacturer's recommended graffiti removal instructions, and recommendations for recoating. Furnish names and addresses of cleaning firms and of suppliers of maintenance materials.

- H. Maintenance Material: Furnish five gallons of each product specified.

1.03 QUALITY ASSURANCE

- A. Manufacturer's Observation: Start coating application under the observation of the coating manufacturer's technical representative. Notify Project Inspector and coating manufacturer at least 72 hours before starting installation.
- B. Preliminary Tests: Perform tests on each kind of surface to be treated to establish the actual application rates required to provide the surfaces resistant to defacing and meet warranty requirements. Tests shall demonstrate the coating does not yellow, darken, mottle, or discolor any treated surface and those surfaces to be treated are dry. Established application rates shall not be less than those recommended in the coating manufacturer's technical data for the kind and surface orientation of the material.
- C. Compliance with Regulations: Materials shall comply with the current rules and regulations of the local air quality management district, with the rules regarding volatile organic compounds, and with FDA rules and regulations for dangerous materials in coatings.
- D. Materials shall meet requirements of SCAQMD regarding emission of solvents and other pollutants.
- E. Qualifications:
 - 1. Manufacturer: Anti-graffiti coating shall be product of a manufacturer who has been regularly engaged in manufacturing anti-graffiti coatings for at least 5 years. Manufacturer shall supply references of at least five satisfactory installations in which anti-graffiti coating has been in service for at least five years.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver coating materials to the Project site in containers bearing name and batch number of manufacturer, with seals intact.

1.05 PROJECT CONDITIONS

- A. Protection: Install temporary coverings and protection, and do not allow coating to contact plastic, planting soil, plants, asphaltic paving, roofing membranes, or other materials that are likely to be damaged by coating.
- B. Weather Conditions: Do not install coating during windy, wet, or excessively hot or dry weather conditions.

1.06 WARRANTY

- 1. Manufacturer shall provide a five year material warranty.
- 2. Installer shall provide a one year application warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE PRODUCTS

- A. Permashield, by Monopole Inc.:
 - 1. Permashield Premium 5600 over Aquaseal ME12, Permanent Graffiti Control, Monopole Inc., ND Graffiti Shield System, Rainguard VandlGuard System, or equal. Matte finish.
- B. Coval Anti-Graffiti coating by Coval Molecular Coatings.

2.02 PROPERTIES

- A. Coatings shall not darken or discolor the treated surfaces and shall be non-toxic, compatible with standard polymer type sealing materials, conforming to AQMD 1113, and certified by manufacturer as suitable over paint finish.
- B. Colors of opaque materials shall match adjoining colors, or shall be selected from manufacturer's custom colors.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not start installation of coating if conditions are present that prevent or interfere with the correct preparation of surfaces or installation of coating system.

3.02 PREPARATION

- A. Remove dust, dirt, oil, grease, other deleterious substances and stain, and efflorescence and laitance from surfaces. Repair cracks and holes over 1/16 inch size. Spot prime cracks and holes 1/16 inch size and smaller and prime horizontal surfaces other than soffits with a heavy duty coating supplied by same coating manufacturer. Mask and protect adjoining surfaces and glass, unless coating is harmless and easily removed.

3.03 APPLICATION

- A. Install the anti-graffiti coating to surfaces indicated on drawings.
- B. Test graffiti resistant coating in an inconspicuous location to ensure adhesion and performance.
- C. Apply the anti-graffiti coating to surfaces indicated on drawings per manufacturer's recommended application methods and thicknesses.

131028

3.04 CLEANING

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.05 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION

SECTION 10 1100
VISUAL DISPLAY UNITS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Wall mounted marker boards.
 - 4. Tack boards.
- B. Related Requirements:
 - 1. Division 01 - General Requirements.
 - 2. Section 06 1000 - Rough Carpentry.
 - 4. Section 09 9000 - Painting and Coating.

1.02 SUBMITTALS

- A. Shop Drawings: Shop Drawings to indicate gages, profiles, sections of materials, details of construction, hardware, methods of attachment and/or anchoring, as applicable for specified materials.
- B. Samples: Submit the following:
 - 1. Three- inch by 5-inch marker board Samples, provide manufacturer's full range of colors.
 - 2. Three- inch by 5-inch sliding bulletin board Samples, provide manufacturer's full range of colors.
- C. Product Data: Submit manufacturer's technical data, product specifications, installation instructions, and other pertinent information as applicable for each product or material specified.
- D. Test Reports: Submit certified laboratory test reports as applicable to indicate compliance with specified requirements.

1.03 QUALITY ASSURANCE

- A. Manufacturer shall have been regularly engaged in the business of manufacturing markerboards for at least five years.
- B. Comply with requirements and recommendations of applicable portions of Porcelain Enamel Institute - PEI 2.

1.04 PRODUCT HANDLING

- A. Deliver materials to the Project site with manufacturer's labels intact and legible.
- B. Protect marker boards before, during and after installation.

1.05 JOB CONDITIONS

- A. Sequencing, Scheduling:
 - 1. Coordinate with related Work of other sections including gypsum board and tackboards.
 - 2. Do not install markerboards until paint is installed to surfaces concealed behind them.

1.06 SPECIAL PROJECT WARRANTY

- A. Manufacturer shall provide a 50 year material warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. W.E. Neal Slate Co.
- B. ABC School Equipment.
- C. Claridge Inc.
- D. Equal.

2.02 SYSTEM PERFORMANCE

- A. System shall be comprised of factory assembled markerboards, in configurations and sizes indicated on the Drawings or as specified herein.
- B. Laminations of panel components shall be by face sheet manufacturer.

2.03 MATERIALS

- A. Wall-Mounted Marker boards
 - 1. Dry marker boards shall be porcelain enamel steel manufactured to exceed the performance specifications for porcelain enamel S104 of the Porcelain Institute. Markerboards shall be capable of supporting papers by means of magnets. The writing surface shall resist wear and damage from shock and abrasion and shall not dent, shatter or crack. The surfaces shall retain original color, writing, and erasing qualities and shall not become glossy or shiny in normal use. The gloss variation of a surface shall not exceed three units when measured by a 45 degree gloss meter in accordance with the Porcelain Enamel Institute Bulletin 1-18 Gloss Test for Porcelain Enamels and ASTM C346.

2. Steel: Base metal shall be high quality enameling iron or steel of low metalloid and copper content, especially manufactured and processed for temperatures over 1,400 degrees F. used in coating porcelain on steel units for Architectural purposes; minimum 24 gage.
3. Facing Surfaces:
 - a. Board surfaces shall consist of the following:
 - 1) Primer coat, 0.0025 inch minimum thickness.
 - 2) Vitreous-porcelain writing surface coating of 0.0025 inch minimum thickness.
 - 3) The reverse side of the steel base sheet shall receive a ground coat of 0.0005 inch thickness and a spray coat of silicon.
 - 4) The panel edges at butt joints shall be porcelain enamel.
 - 5) Fuse cover and ground coats to the steel at the manufacturer's standard firing temperature, but at least 1,250 degrees F.
3. The dry marker board surfaced steel shall be factory laminated to 7/16 inch thick fiberboard core. A moisture blocking backing sheet shall be provided.
 - a. Fiberboard Core shall be #45 pound particle board.
 - b. Moisture Barrier Backer Sheet shall be minimum .015 aluminum or 28 gauge galvanized steel. Backer sheet shall be factory laminated to the core under pressure.
5. Lamination: The surface facing and the backing shall be bonded to the core material by means of a special flexible adhesive developed for this purpose with no unbonded area. The face and back shall not be removable without rupturing the core material. Panels shall not delaminate under normal use.
6. Joints: Where vertical joints occur, a 14 gage continuous concealed steel spline shall be fitted tightly into grooves in the core material. Factory rabbet to produce a smooth butt joint. Do not furnish exposed trim.
7. Edge Trim:
 - a) Alloy 6063-T5, extruded, anodized satin finish aluminum.
8. Chalktray: Furnish manufacturer's standard continuous flat-ribbed or box-type aluminum chalktray with stained front and cast plastic end closures for each chalkboard and markerboard.
 - a. Extend chalk tray to end of both vertical edges of the board.

- b. On flat-rib tray, provide 3/4 inch radius on corners and polish at ends.
 - 9. Map Rail: Furnish map rail at the top of each unit, complete with the following accessories:
 - a. Display rail: Provide continuous cork display rail 2-inch wide, as indicated, integral with the map rail. Extend display rail to end of both vertical edges.
 - b. End stops: Provide one end stop at each end of the map rail.
 - c. Map hooks: Provide two map hooks with flexible paper holder clips for each 8 feet of map rail or fraction thereof.
 - d. Roller Map Bracket: Provide two for each 8 feet of map rail or fraction thereof.
- D. Tack boards:
 - 1. Tackwall panels shall consist of single-face layer of cloth-backed vinyl film, factory-bonded to 1/2 inch wood fiberboard backing; weight of vinyl film to be 20 ounces per lineal yard. Panel edges shall be beveled and wrapped; ends shall be square and unwrapped. Color as selected by Architect.
 - a. Vinyl film shall comply with FS CCC-W-408 A, Type 1; backing shall comply with FS LLL-1-535B, Class A. Finished panel shall have a Fire Hazard Classification of Class II in accordance with ASTM E84 tunnel test, as administered by California State Fire Marshal approved testing laboratory.
 - 2. Adhesive shall be as recommended by manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install markerboard, trim, map rail and marker tray in accordance with manufacturer's directions. Fasteners for assembly of trim and frame units shall be truss head aluminum or stainless steel self-tapping screws with double cadmium-plated finish.
- B. Install panels after finish painting of wall surfaces has been completed and paint is cured. Install panels level, plumb and neatly assembled. Before Substantial Completion, trim shall be cleaned of dirt, finger-marks, and other foreign material.
- C. Install panel guides, spacers, and panels at media wall cabinets.

3.02 CLEANUP

- A. Remove rubbish, debris, and waste materials and legally dispose of off the Project site.

3.03 PROTECTION

- A. Protect the Work of this section until Substantial Completion.

END OF SECTION