



Technical Specifications

Siskiyou County Board of Supervisors Chamber Remodel



May 2023

Bid Set #2 9/6/23

NMR Job No. 22-6513

Advertisement for Bidders

JOB COPY
B230217

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ARCHITECT:

Rudy Tanner
License Number: C33029

Nichols, Melburg, & Rossetto
300 Knollcrest Drive
Redding, CA 96002
T. (530) 222-3300
tanner@nmrdesign.com



JOB COPY

COUNTY OF **SISKIYOU**
Building Department

SIGNATURE NO. DATE

PLANS REC'D _____

CALC'S REC'D _____

ELECT LOAD CALC _____

PLANS APPROVED *[Signature]* B230217.5/25/23

As submitted with exceptions to be filled. Any deviations from approved plans are subject to prior approval.

Formal approval of these plans does not relieve the designer or builder of his responsibility of compliance with state and local construction laws.

These plans are to be available for inspection onsite, or no inspection will be made.

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SECTION 00 11 13
ADVERTISEMENT FOR BIDDERS

Notice is hereby given that separate sealed bids for the award of contract for the construction of **Board of Supervisors Chambers Remodel** will be received by Siskiyou County at the office of the office of General Services until **3:00 p.m. Pacific Daylight Savings Time, October 02, 2023** and then at said office publicly opened and read aloud.

The major work consists of interior improvements and associated utility connections for Board of Supervisors Chambers, conference room, gender neutral ADA toilet room, and adjacent spaces. New casework to include dais, electrically operable lectern, display wall (with County seal), and IT/A/V cabinet.

The time for completion shall be ninety (90) calendar days.

The Contract Documents, in their entirety, can be viewed and/or obtained from the County of Siskiyou website at www.co.siskiyou.ca.us or at the following locations:

Siskiyou Builders Exchange (<https://www.siskiyoubuilders-exchange.org/>)

Shasta Builders Exchange (<https://www.shastabe.com/>)

A payment bond prepared and executed in accordance with California Civil Code Section 3247 and a bond for faithful performance of the contract will be required of the successful bidder who is awarded the contract.

The successful bidder must comply with the latest general prevailing rate of per diem wages as determined by the Director of Industrial Relations, State of California, Department of Industrial Relations and is to be paid to the various craftsmen and laborers required to construct said improvements and is made a part of the specifications and contract for said work to which reference is hereby made for further particulars.

No contractor or subcontractor may be listed on a bid proposal or awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5.

This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. Contractor registration information can be found at:

<http://www.dir.ca.gov/Public-Works/PublicWorks.html>

Each bid shall be accompanied by cashier's or certified check or by a bidder's bond, made payable to the County of Siskiyou and executed by a corporate surety licensed to issue surety bonds in the State of California, for an amount equal to at least ten percent (10%) of the amount of said bid and no bid shall be considered unless such cashier's or certified check or bidder's bond is enclosed therewith.

The successful bidder of this project shall have the following current and active California State Contractor's License at the time of the submission of the bid and throughout the duration of the contract: **Class A – General Contractor** or **Class B – General Building Contractor**.

Bidders shall refer to the Contract Document's Information for Bidders for complete instructions.

Bidders are solely responsible for the cost of preparing their bids.

The County specifically reserves the right, in its sole discretion, to reject any or all bids, to re-bid. Or to waive inconsequential defects, in bidding not involving time, or quality of the work. The County may reject any and all bids and waive any minor irregularities in the bids.

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**SECTION 00 21 13
INSTRUCTIONS TO BIDDERS**

1. **DEFINITIONS:** For the purpose of these Contract Documents and Performance Specifications, the term "Owner" as it is used herein shall mean Siskiyou County, California.
2. **PROPOSALS SHALL INCLUDE:**
 - A. Total contract amount for Base Bid.
 - B. Proposals shall be made on a form provided herein. All items on the form should be filled out; numbers should be stated both in writing and in figures and signatures of all individuals must be in longhand. The completed form should be without interlineations, alterations or erasures.
 - C. All prices or notations must be typed or written in ink. Bids written with pencil will not be accepted. Verify all quotations before submission, as they cannot be corrected after the proposals are opened.
 - D. All proposals must be signed with the firm name, and by a responsible officer or employee. Obligations assumed by such signature must be fulfilled.
 - E. All addenda or bulletins issued during the time of bidding are to be covered in the proposal and in closing a contract they will become a part thereof.
 - F. A list of all Subcontractors must be attached which includes subcontractor name, item of work, place of business, and current license number.
 - G. An executed Bid Bond must be attached. Bid Bonds shall be submitted on the Surety's standard form with the necessary documentation required by the California Public Contract Code. The company issuing the bond, however, shall be an Admitted Surety, that is an insurance organization authorized by the State Insurance Commissioners to transact business of insurance in the State of California this business year. The Bid Bond must be 10% of the Bid Amount.
 - H. An executed Non-Collusion Affidavit must be attached.
 - I. An executed Worker's Compensation Certificate must be attached.
 - J. Proposals may be withdrawn by the bidder prior to, but not after, the time fixed for the opening of proposals.
3. **INTERPRETATION OF DOCUMENTS:** Should a bidder find discrepancies and/or omissions or should be in doubt as to their meaning, contact Rudy Tanner, Nichols, Melburg & Rossetto, 2455 Bennett Valley Road, Suite B303, Santa Rosa, CA 95404, tanner@nmrdesign.com. Should it be found necessary, a written addendum will be sent to all bidders. The Architect will not be responsible for any oral interpretations or instructions.
4. **SEQUENCE OF THE CONSTRUCTION:** The construction work must be accomplished with a minimum disruption to the occupants of the existing adjacent spaces.
5. **CONTRACTOR'S REQUIREMENTS:** After award of the contract, the Contractor shall adhere to the following:
 - A. Make all necessary communications with utility companies and regulatory agencies affecting this project.
 - B. The Contractor shall furnish the Architect with a schedule of dates for completion of the work no later than fourteen (14) days after the execution of the contract.

**SECTION 00 21 13
INSTRUCTIONS TO BIDDERS**

6. **SUBCONTRACTORS:** The successful Bidder shall not, without the consent of the Owner:
- A. substitute any person as subcontractor in place of the subcontractor designated in the original bid;
 - B. permit any subcontractor to be assigned or transferred or allow the work to be performed by anyone other than the subcontractor; or
 - C. sublet or subcontract any portion of the Project in excess of one-half (1/2) of one percent (1%) of the total bid as to which its original bid did not designate a subcontractor.

The Owner's consent shall be given only in accordance with the provisions of Public Contract Code section 4107.

7. **STANDARD INCLUSIONS**

- A. The Contractor and Subcontractors shall thoroughly review the construction documents and acknowledge that care and coordination will be required to coordinate the work of all trades.
 - B. The Architect/Engineer has attempted to coordinate the requirements with the plans. No additional cost shall be claimed by or paid to the Contractor or Subcontractors for any of the following:
 - a. Additional work required due to an inconsistency within or between the various plans if such additional work is necessary to carry out the intent of the design.
 - b. Reasonable and normal adjustments resulting from the coordination of all General Contractor and Subcontractor work with that of all trades.
 - c. Any scope notes as by a Subcontractor on other drawings or specifications but not shown on the drawings or stated in the Project Manual.
 - d. Elements not sized on the Drawings so long as the eventual sizing is reasonable for the design as intended.
 - C. If there is an inconsistency in the work shown on the contract documents, i.e., overall vs. details, assume the contract document showing the greater scope of work to be correct. In matters of quantity the drawings shall govern. In matters of quality the specifications shall govern.
 - D. It is the Contractor's responsibility to address any questions for items shown on the contract drawings, reports and specifications prior to bid. Any question regarding the designs as shown on the contract documents asked after the awarding of a contract will be the responsibility of the Contractor and/or Subcontractor.
 - E. Coordinate with all trades as required for special locations and points of connection for this scope of work.
 - F. Contractor shall visit site prior to bid and familiarize themselves with the existing conditions.
 - G. Contractor shall provide all layout, field engineering required for the performance of this work, including protection of reference points and replacement of such points that are lost or damaged during the execution of this work.
8. **LIQUIDATED DAMAGES FOR DELAY:** It is understood and agreed that in case all of said work is not complete within the Agreement time, damages will be sustained by the Owner, and that it is and will be impractical or extremely difficult to determine the actual damages which the Owner will sustain in the event and by reason of such delay; and it is therefore agreed that the Contractor will pay to the Owner the sum of five hundred dollars (\$500) per day for each and every day's delay beyond the Agreement time specified as liquidated damages and in case the same are not paid, agrees that the

**SECTION 00 21 13
INSTRUCTIONS TO BIDDERS**

Owner may deduct the amount therefrom any money due or that may become due the Contractor under this contract.

The Contractor shall submit in writing to the Architect all requests for time extension beyond the Agreement time, within five (5) days from the date such delay becomes known.

9. **TIME OF COMPLETION:** It is agreed by the parties of this Contract that the completion of all work of this contract shall be within one hundred and twenty (120) calendar days from the date of the Notice to Proceed.
10. **AGREEMENT AND BONDS:** The Contract Documents include the Agreement that the successful bidder, as Contractor, will be required to execute. The requirements and forms of bonds that he will be required to furnish are included herein and shall become part of the Contract Documents.
11. **WITHDRAWAL OF BIDS:** Bids may be withdrawn by bidders prior to, but not later than, the time of bid opening.
12. **DELIVERY OF BIDS:** Bids shall be sealed in an envelope plainly marked "BID", shall bear the title of the work and shall be delivered to the place designated in the "Invitation for Bids" on or before the day and hour set for the opening of bids and said Advertisement. Faxed bids will not be accepted.
13. **EXAMINATION OF SITE AND DOCUMENTS:** Before submitting a bid, intending bidders shall carefully examine the Contract Documents, shall visit the site of the work and fully inform themselves as to all existing conditions and limitations. Bidders shall include in the bid a sum sufficient to cover the cost of all items included in the Contract.
14. **DURATION OF BID:** All bid proposals submitted shall be considered irrevocable offers to perform the work in accordance with the Contract Documents if the Contract is awarded within sixty (60) days from the date bids were received.
15. **BID PROTEST:** In order to protest the Owner's award of Contract, a disappointed Bidder must:
 - a) submit a written description of all grounds for its protest to Owner within forty-eight (48) hours of the time that the Owner announces an apparent low bidder; and
 - b) file an action with the Superior Court seeking to enjoin enforcement of the contract and serve it on Owner within five (5) business days of award of contract.
16. **CONSTRUCTION CONFERENCES:** It is understood that at the option of the Architect, the following construction conferences will be held at the approximate time indicated:
 - A. Non-mandatory Pre-bid Conference: September 19th at 10:00 a.m., held at the project site. The main entrance of 311 Fourth Street, Yreka, CA.
 - B. Preconstruction Conference - After the award of Contract and prior to commencement of the construction.
 - C. Construction Conference - As required.
 - D. Post Construction Conference - Prior to filing the Notice of Completion.
18. **PREVAILING LAW:** In the event of any conflict or ambiguity between these instructions and State or Federal law or regulations, the latter shall prevail.
19. **No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)].**
20. **No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial**

**SECTION 00 21 13
INSTRUCTIONS TO BIDDERS**

Relations pursuant to Labor Code section 1725.5.

- 21. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.**

Contractor Name: _____

BID TO PERFORM CERTAIN WORK:

County of Siskiyou
190 Greenhorn Road
Yreka, CA 96097

Bids will be received up to and no later than 3:00pm on October 02, 2023 at the County of Siskiyou Department of General Services Office, 190 Greenhorn Road, Yreka, CA 96097.

The undersigned hereby proposes and agrees to furnish any and all required labor, materials, equipment, transportation and services for the **Siskiyou County Board of Supervisors Chamber Remodel** in strict conformity with the plans, specifications and other documents on file at the office of the Architect, Nichols, Melburg & Rossetto, 300 Knollcrest Drive, Redding, CA 96002.

BASE BID:

_____ DOLLARS (\$_____)

If Notified within sixty (60) days of the date of receiving bids the undersigned hereby agrees to sign said Contract and furnish the necessary bonds within ten (10) days after written notice of the award of said Contract.

The undersigned has examined the location of the proposed work and is familiar with the Plans, Specifications and other Contract Documents, and with local conditions at the place where the work is to be done.

The undersigned has examined carefully all the above figures and understands that Siskiyou County not be responsible for any errors or omissions on the part of the undersigned in making up this Bid.

(The undersigned hereby agrees the contract time noted in the Instruction to Bidders is reasonable.)

ENCLOSED PLEASE FIND BIDDER'S BOND, CERTIFIED CHECK NO. _____, OR CASHIER'S CHECK NO. _____ FOR THE _____ BANK, FOR \$ _____.

The undersigned agrees that all Addenda received and acknowledged herein shall become a part of and included in this Bid. This Bid includes the following Addenda:

ADDENDA NUMBERS: _____

NAME OF FIRM: _____

TYPE OF FIRM: _____
(Corporation, Partnership, Etc.)

ADDRESS: _____

CITY AND STATE: _____

CONTRACTOR'S LICENSE NUMBER: _____

EXPIRATION DATE OF CONTRACTOR'S LICENSE: _____

The contractor's license number and expiration date as stated herein are made under penalty of perjury.

CALIFORNIA DEPARTMENT OF INDUSTRIAL RELATIONS REGISTRATION
NUMBER: _____

DATE: _____ CONTRACTOR'S SIGNATURE _____

CONTRACTOR NAME: _____

CONTRACTOR NAME: _____

LIST OF SUBCONTRACTOR'S:

Pursuant to the provisions of Section 4100 to 4108, inclusive, of the Governmental Code of the State of California, as set forth in the Instructions to Bidders and General Conditions, Section 17, the undersigned hereby designates below the names and locations of the place of business for each Subcontractor.

SUBCONTRACTOR NAME	ITEM OF WORK	PLACE OF BUSINESS	CURRENT LICENSE NO.	D.I.R. NUMBER
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

**SECTION 00 52 00
AGREEMENT FORM**

THIS CONTRACT, made in three copies on this ___ day of _____, Two Thousand and Twenty-Three by and between the County of Siskiyou, California, hereinafter referred to as OWNER, and _____, hereinafter referred to as CONTRACTOR.

WITNESSETH: That the OWNER and CONTRACTOR, for the consideration herein after named, agree as follows:

ARTICLE ONE:

The CONTRACTOR agrees to perform and complete in the best workmanlike manner, all of the work and furnish all of the materials necessary for the **Siskiyou County Board of Supervisors Chambers Remodel** in strict conformity with the Contract Documents, including all addenda thereto, and all of which are adopted by the OWNER, and prepared by NICHOLS, MELBURG & ROSSETTO, 300 Knollcrest Drive, Redding, California 96002.

ARTICLE TWO:

It is understood and agreed that the work of this Contract shall and will be completed in ninety (90) days from the date of issuance of the Notice to Proceed. The CONTRACTOR agrees the contract time is reasonable.

ARTICLE THREE:

The Contract Documents consist of the Drawings, Documents, Specifications, and accepted proposal, together with all modifications and addenda included in these documents before their execution.

The TOTAL SUM is:

_____DOLLARS

(\$_____)

This TOTAL SUM constitutes the bid for the complete project.

IN WITNESS WHEREOF, the parties hereto, the OWNER and the CONTRACTOR, set their hands and seals the day and year first above written.

By: _____ Dated: _____

County of Siskiyou

By: _____ Dated: _____

CONTRACTOR

By: _____ Dated: _____

CORPORATE SEAL

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Know all men by these presents, that

WHEREAS, County of Siskiyou (hereinafter OWNER), at a regular Business Meeting on _____, have awarded to _____, hereinafter designated as the Contractor, a contract for _____

and

WHEREAS, said Contractor is required under the terms of said contract to furnish a bond for the faithful performance of said contract;

NOW, THEREFORE, We, the Contractor and

_____, as Surety, are held and firmly bound unto the County of Siskiyou, hereinafter called the OWNER, in the penal sum of

DOLLARS (\$ _____) lawful money of the United States for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of the obligation is such, that if the above bonded Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the said contract and any alteration thereof made as therein provided, on his or their parts to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning, and shall indemnify and save harmless OWNER, its officers and agents, as therein stipulated, then this obligation shall become null and void. Otherwise it shall be and remain in full force, virtue, and effect.

And the said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the specifications accompanying the same shall in anywise affect its obligations on this bond, it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the work or to the specifications.

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

**SECTION 00 61 13.13
PERFORMANCE BOND**

Surety further agrees that death of the Contractor shall not relieve the surety of its obligations hereunder.

In witness whereof, five (5) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Contractor and Surety above named on the _____ day of _____, 20__.

(To be signed by Contractor and Surety and acknowledgment and notarial seal to be attached.)

Principal

By _____

Title _____

Surety

By _____

Title _____

The above bond is accepted and approved this _____ day of _____, 20__.

By: _____
Authorized City Signature

PAYMENT BOND

Know all men by these presents: that

WHEREAS, County of Siskiyou (hereinafter "OWNER") and _____, hereinafter designated as the "Contractor", have entered into a contract for the furnishing of all materials, labor services and transportation necessary, convenient, and proper with said Agreement dated and all of the contract documents attached to or forming a part of said Agreement, are hereby referred to and made a part hereof, and

WHEREAS, pursuant to law, the Contractor is required before entering upon the performance of the work, to file a good and sufficient bond with the body by whom the contract is awarded, in accordance with Section 9100 of the Civil Code of California.

NOW, therefore, these presents witnesseth: That the said Principal and the undersigned

_____,
("Surety") are held and firmly bound unto all laborers, material men, and other persons, and bound for all amounts due, referred to in Civil Code section 9554, subdivision (b), in the sum of _____ Dollars (\$_____) which sum well and truly be made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the said Principal or any of its subcontractors, or the heirs, executors, administrators, successors, or assigns of any, all, or either of them, shall fail to pay any of the persons named in Civil Code section 9100, or any of the amounts due, as specified in Civil Code section 9554, subdivision (b), that said Surety will pay the same in an amount not exceeding the amount hereinabove set forth, and also in case suit is brought upon this bond, will pay costs and reasonable attorney's fees to be awarded and fixed by the Court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void, otherwise it shall be and remain in full force and effect.

And the said Surety, for value received, thereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of said contract or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

In witness whereof, this instrument has been duly executed by the Principal and Surety this _____ day of _____.

(To be signed by Principal and Surety and acknowledgement with Notary seal to be attached).

Principal

By _____

Title _____

Date _____

Surety Company

By _____

Title _____

Attorney-In-Fact

Date _____

The above bond is accepted and approved this _____ day of _____, 20__.

By: _____

Authorized City Signature

**SECTION 00 62 00
NON-COLLUSION AFFIDAVIT**

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH PROPOSAL

To: County of Siskiyou
State of California

_____ being first duly sworn, deposes and says that he or she is _____ of _____ the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true and, further, that 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, or paid , and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

IN WITNESS WHEREOF, The Parties to these presents have hereunto set their hands the year and date first above written.

(The above certificate must be signed and filed with the District prior to performing any work under this Contract.)

CONTRACTOR

By: _____ Dated: _____

NOTARY

By: _____ Dated: _____

SEAL:

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**CERTIFICATE
REGARDING WORKERS' COMPENSATION**

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

Labor Code Section 3700 in relevant part provides:

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

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

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

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

Contractor

By: _____

(In accordance with Article 5 [commencing at Section 1860], Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and filed with the awarding body prior to performing any work under this Contract.)

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SECTION 00 72 00

AIA Document A201

General Conditions of the Contract for Construction

*THIS DOCUMENT HAS IMPORTANT LEGAL CONSEQUENCES; CONSULTATION
WITH AN ATTORNEY IS ENCOURAGED WITH RESPECT TO ITS MODIFICATION*

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This document has been approved and endorsed by the Associated General Contractors of America.

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1

GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter 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 other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of addenda relating to bidding requirements).

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 Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor or (3) between any persons or entities other than the Owner and 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 or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, 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, equip-

ment, construction systems, standards and workmanship for the Work, and performance of related services.

1.1.7 THE PROJECT MANUAL

The Project Manual is the volume usually assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

1.2 EXECUTION, CORRELATION AND INTENT

1.2.1 The Contract Documents shall be signed by the Owner and Contractor as provided in the Agreement. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

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

1.2.3 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 intended results.

1.2.4 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.

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

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

1.3.1 The Drawings, Specifications and other documents prepared by the Architect are instruments of the Architect's service through which the Work to be executed by the Contractor is described. The Contractor may retain one contract record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect, and unless otherwise indicated the Architect shall be deemed the author of them and will retain all common law, statutory and other reserved rights, in addition to the copyright. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the

Work without the specific written consent of the Owner and Architect. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are granted a limited license to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this license shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's copyright or other reserved rights.

1.4 CAPITALIZATION

1.4.1 Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles and identified references to Paragraphs, Subparagraphs and Clauses in the document or (3) the titles of other documents published by the American Institute of Architects.

1.5 INTERPRETATION

1.5.1 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.

ARTICLE 2

OWNER

2.1 DEFINITION

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 term "Owner" means the Owner or the Owner's authorized representative.

2.1.2 The Owner upon reasonable written request shall furnish to the Contractor in writing information which is 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 at the time of execution of the Agreement and, within five days after any change, information of such change in title, recorded or unrecorded.

2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.2.1 The Owner shall, at the request of the Contractor, prior to execution of the Agreement and promptly from time to time thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. *[Note: Unless such reasonable evidence were furnished on request prior to the execution of the Agreement, the prospective contractor would not be required to execute the Agreement or to commence the Work.]*

2.2.2 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.

2.2.3 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assess-

ments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

2.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness to avoid delay in orderly progress of the Work.

2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

2.2.6 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Article 6 (Construction by Owner or by Separate Contractors), Article 9 (Payments and Completion) and Article 11 (Insurance and Bonds).

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Paragraph 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner, by written order signed personally or by an agent specifically so empowered by the Owner in writing, may order 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 Subparagraph 6.1.3.

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a second seven-day period. If the Contractor within such second seven-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services and expenses made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3

CONTRACTOR

3.1 DEFINITION

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 term "Contractor" means the Contractor or the Contractor's authorized representative.

3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

3.2.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Subparagraph 2.2.2 and shall at once report to the Architect errors, inconsistencies or omissions discovered. The Contractor shall not be liable to the Owner or Architect for damage resulting from errors, inconsistencies or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency or omission and knowingly failed to report it to the Architect. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Architect, the Contractor shall assume appropriate responsibility for such performance and shall bear an appropriate amount of the attributable costs for correction.

3.2.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies or omissions discovered shall be reported to the Architect at once.

3.2.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 3.12.

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, unless Contract Documents give other specific instructions concerning these matters.

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 performing portions of the Work under a contract with the Contractor.

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

3.3.4 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract 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.

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

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 otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

3.6 TAXES

3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor which 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 AND NOTICES

3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required when bids are received or negotiations concluded.

3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities bearing on performance of the Work.

3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

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 against which the Contractor makes reasonable objection.

3.8.2 Unless otherwise provided in the Contract Documents:

- .1 materials and equipment under an allowance shall be selected promptly by the Owner to avoid delay in the Work;
- .2 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

- 3.3 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 and not in the allowances;
- 3.4 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 Clause 3.8.2.2 and (2) changes in Contractor's costs under Clause 3.8.2.3.

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. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

3.10.2 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

3.10.3 The Contractor shall conform to the most recent schedules.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, addenda, Change Orders and other Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner upon completion of the Work.

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 which 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. The purpose of their submittal is to demonstrate for those portions of the Work for

which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Subparagraph 4.2.7.

3.12.5 The Contractor shall review, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents 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. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action.

3.12.6 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect. Such Work shall be in accordance with approved submittals.

3.12.7 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

3.12.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submittal and the Architect has given written approval to the specific 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.

3.12.10 Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents.

3.12.11 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Architect shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

3.13 USE OF SITE

3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits 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.

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 such construction by the

Owner or a separate contractor except with written consent of the Owner and of such separate contractor; such consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold from the Owner or a separate contractor the Contractor's 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 or rubbish caused by operations under the Contract. At completion of the Work the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

3.16 ACCESS TO WORK

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

3.17 ROYALTIES AND PATENTS

3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a patent, the Contractor shall be responsible for such loss unless such 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) including loss of use resulting therefrom, but only to the extent caused in whole or in part by 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 which would otherwise exist as to a party or person described in this Paragraph 3.18.

3.18.2 In claims against any person or entity indemnified under this Paragraph 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 this Paragraph 3.18 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' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

3.18.3 The obligations of the Contractor under this Paragraph 3.18 shall not extend to the liability of the Architect, the Archi-

tect's consultants, and agents and employees of any of them arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, Change Orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, the Architect's consultants, and agents and employees of any of them provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 4

ADMINISTRATION OF THE CONTRACT

4.1 ARCHITECT

4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

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.

4.1.3 In case of termination of employment of the Architect, the Owner shall appoint an architect against whom the Contractor makes no reasonable objection and whose status under the Contract Documents shall be that of the former architect.

4.1.4 Disputes arising under Subparagraphs 4.1.2 and 4.1.3 shall be subject to arbitration.

4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the correction period described in Paragraph 12.2. The Architect will advise and consult with the Owner. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified by written instrument in accordance with other provisions of the Contract.

4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when 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 quality or quantity of the Work. On the basis of on-site observations as an architect, the Architect will keep the Owner informed of progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work.

4.2.3 The Architect will not have control over or charge of and will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's responsibility as provided in Paragraph 3.3. The Architect will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Con-

tractor, Subcontractors, or their agents or employees, or of any other persons performing portions of the Work.

4.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate through the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

4.2.5 Based on the Architect's observations and 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 will have authority to reject Work which does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable for implementation of the intent of the Contract Documents, the Architect will have authority to require additional inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such 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, material and equipment suppliers, their agents or employees, or other persons 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 with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, 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 Paragraphs 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, 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 authorize minor changes in the Work as provided in Paragraph 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, will 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, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

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 duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

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 with reasonable promptness and within any time limits agreed upon. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Paragraph 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.

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 so 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.

4.3 CLAIMS AND DISPUTES

4.3.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, adjustment or interpretation of Contract terms, payment of money, extension of 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. Claims must be made by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

4.3.2 Decision of Architect. Claims, including those alleging an error or omission by the Architect, shall be referred initially to the Architect for action as provided in Paragraph 4.4. A decision by the Architect, as provided in Subparagraph 4.4.4, shall be required as a condition precedent to arbitration or litigation of a Claim between the Contractor and Owner as to all such matters arising prior to the date final payment is due, regardless of (1) whether such matters relate to execution and progress of the Work or (2) the extent to which the Work has been completed. The decision by the Architect in response to a Claim shall not be a condition precedent to arbitration or litigation in the event (1) the position of Architect is vacant, (2) the Architect has not received evidence or has failed to render a decision within agreed time limits, (3) the Architect has failed to take action required under Subparagraph 4.4.4 within 30 days after the Claim is made, (4) 45 days have passed after the Claim has been referred to the Architect or (5) the Claim relates to a mechanic's lien.

4.3.3 Time Limits on Claims. Claims by either party must be made 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. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

4.3.4 Continuing Contract Performance. Pending final resolution of a Claim including arbitration, unless otherwise agreed in writing the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

4.3.5 Waiver of Claims: Final Payment. 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; or
- .3 terms of special warranties required by the Contract Documents.

4.3.6 Claims for Concealed or Unknown Conditions. If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, which 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, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if 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 an equitable adjustment 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 so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Paragraph 4.4.

4.3.7 Claims for Additional Cost. If the Contractor wishes to make Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10.3. If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with the procedure established herein.

4.3.8 Claims for Additional Time

4.3.8.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein 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.

4.3.8.2 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 and could not have been reasonably anticipated, and that weather conditions had an adverse effect on the scheduled construction.

4.3.9 Injury or Damage to Person or Property. If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If a Claim for additional cost or time related to this Claim is to be asserted, it shall be filed as provided in Subparagraphs 4.3.7 or 4.3.8.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

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

4.4.2 If a Claim has been resolved, the Architect will prepare or obtain appropriate documentation.

4.4.3 If a Claim has not been resolved, the party making the Claim shall, within ten days after the Architect's preliminary response, take one or more of the following actions: (1) submit additional supporting data requested by the Architect, (2) modify the initial Claim or (3) notify the Architect that the initial Claim stands.

4.4.4 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Architect, the Architect will notify the parties in writing that the Architect's decision will be made within seven days, which decision shall be final and binding on the parties but subject to arbitration. Upon expiration of such time period, the Architect will render to the parties the Architect's written decision relative to the Claim, including any change in the Contract Sum or Contract Time or both. If there is a surety and there appears to be a possibility of a Contractor's default, the Architect may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

4.5 ARBITRATION

4.5.1 Controversies and Claims Subject to Arbitration. Any controversy or Claim arising out of or related to the Contract, or the breach thereof, shall be settled by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association, and judgment upon the award rendered by the arbitrator or arbitrators may be entered in any court having jurisdiction thereof, except controversies or Claims relating to aesthetic effect and except those waived as provided for in Subparagraph 4.3.5. Such controversies or Claims upon which the Architect has given notice and rendered a decision as provided in Subparagraph 4.4.4 shall be subject to arbitration upon written demand of either party. Arbitration may be commenced when 45 days have passed after a Claim has been referred to the Architect as provided in Paragraph 4.3 and no decision has been rendered.

4.5.2 Rules and Notices for Arbitration. Claims between the Owner and Contractor not resolved under Paragraph 4.4 shall, if subject to arbitration under Subparagraph 4.5.1, be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect, unless the parties mutually agree otherwise. Notice of demand for arbitration shall be filed in writing with the other party to the Agreement between the Owner and Contractor and with the American Arbitration Association, and a copy shall be filed with the Architect.

4.5.3 Contract Performance During Arbitration. During arbitration proceedings, the Owner and Contractor shall comply with Subparagraph 4.3.4.

4.5.4 When Arbitration May Be Demanded. Demand for arbitration of any Claim may not be made until the earlier of (1) the date on which the Architect has rendered a final written decision on the Claim, (2) the tenth day after the parties have presented evidence to the Architect or have been given reasonable opportunity to do so, if the Architect has not rendered a final written decision by that date, or (3) any of the five events described in Subparagraph 4.3.2.

4.5.4.1 When a written decision of the Architect states that (1) the decision is final but subject to arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

4.5.4.2 A demand for arbitration shall be made within the time limits specified in Subparagraphs 4.5.1 and 4.5.4 and Clause 4.5.4.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Paragraph 13.7.

4.5.5 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract Documents shall include, by consolidation or joinder or in any other manner, the Architect, the Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a dispute not described therein or with a person or entity not named or described therein. 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.

4.5.6 Claims and Timely Assertion of Claims. A party who files 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. When a party fails to include a Claim through oversight, inadvertence or excusable neglect, or when a Claim has matured or been acquired subsequently, the arbitrator or arbitrators may permit amendment.

4.5.7 Judgment on Final Award. 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.

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 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 or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly 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. The Contract Sum shall be increased or decreased by the difference in cost occasioned by such change and an appropriate Change Order shall be issued. However, no increase in the Contract Sum 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 change a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such change.

5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor, by these 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 which may be at variance with the Contract Documents. Subcontractors shall similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

5.4 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 Paragraph 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

5.4.2 If the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted.

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 Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided elsewhere in the Contract Documents.

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 other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule and Contract Sum 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, the Owner shall be deemed to be subject to the same obligations and to have the same rights which apply to the Contractor 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 report to the Architect apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

6.2.3 Costs caused by delays or by improperly timed activities or defective construction shall be borne by the party responsible therefor.

6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors as provided in Subparagraph 10.2.5.

6.2.5 Claims and other disputes and matters in question between the Contractor and a separate contractor shall be subject to the provisions of Paragraph 4.3 provided the separate contractor has reciprocal obligations.

6.2.6 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Paragraph 3.14.

6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 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 as described in Paragraph 3.15, the Owner may clean up and allocate the cost among those responsible as the Architect determines to be just.

ARTICLE 7**CHANGES IN THE WORK****7.1 CHANGES**

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, and the Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive or order for a minor change in the Work.

7.1.4 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order or Construction Change Directive that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

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

7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Subparagraph 7.3.3.

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 and stating a proposed basis for 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 Subparagraph 7.3.6.

7.3.4 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.

7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor 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.

7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect 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, a reasonable allowance for overhead and profit. In such case, and also under Clause 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 Subparagraph 7.3.6 shall be limited to the following:

- .1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' or workmen's compensation insurance;
- .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 related to the Work; and
- .5 additional costs of supervision and field office personnel directly attributable to the change.

7.3.7 Pending final determination of cost to the Owner, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which 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.

7.3.8 If the Owner and Contractor do not agree with the adjustment in Contract Time or the method for determining it, the adjustment or the method shall be referred to the Architect for determination.

7.3.9 When the Owner and Contractor agree with the 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 shall be recorded by preparation and execution of an appropriate Change Order.

7.4 MINOR CHANGES IN THE WORK

7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

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. The date shall not be postponed by the failure to act of the Contractor or of persons or entities for whom the Contractor is responsible.

8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Paragraph 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, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

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 progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order 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 Paragraph 4.3.

8.3.3 This Paragraph 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.

9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's 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 for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for elsewhere in the Contract Documents.

9.3.1.1 Such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives but not yet included in Change Orders.

9.3.1.2 Such applications may not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.

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 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, material suppliers, or other persons or entities making a claim by reason of having 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 issue to the

Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Subparagraph 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 observations at the site and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, quality of the Work is in accordance with the Contract Documents. 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 minor deviations from the Contract Documents correctable prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. 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 material 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 decide not to certify payment and 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 Subparagraph 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 Subparagraph 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 decide not to certify payment or, because of subsequently discovered evidence or subsequent observations, 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 because of:

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims;
- .3 failure of the Contractor to make payments properly to Subcontractors or 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 another 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 persistent failure to carry out the Work in accordance with the Contract Documents.

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

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 promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such 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 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 Neither the Owner nor Architect shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Subparagraphs 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.

9.7 FAILURE OF PAYMENT

9.7.1 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 arbitration, then the Contractor may, upon seven additional days' written 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 shut-down, delay and start-up, which shall be accomplished as provided in Article 7.

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 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. The Contractor shall proceed promptly to complete and correct items on the list. 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. Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or desig-

nated 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 in accordance with the requirements of the Contract Documents, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. The Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion. When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall 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. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

9.8.3 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof as provided in 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 as required under Subparagraph 11.3.11 and authorized by public authorities having jurisdiction over the Work. 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 Subparagraph 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 written 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 and, 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 observations and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in said final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Subparagraph 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 and will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial 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 and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, 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. If such lien 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 such lien, 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 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 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. The making of final payment shall constitute a waiver of claims by the Owner as provided in Subparagraph 4.3.5.

9.10.4 Acceptance of final payment by the Contractor, a Subcontractor or material 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. Such waivers shall be in addition to the waiver described in Subparagraph 4.3.5.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.1 SAFETY PRECAUTIONS AND PROGRAMS

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

10.1.2 In the event the Contractor encounters on the site material reasonably believed to be asbestos or polychlorinated biphenyl (PCB) which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless, by written agreement of the Owner and Contractor, or in accordance with final determination by the Architect on which arbitration has not been demanded, or by arbitration under Article 4.

10.1.3 The Contractor shall not be required pursuant to Article 7 to perform without consent any Work relating to asbestos or polychlorinated biphenyl (PCB).

10.1.4 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, 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 is asbestos or polychlorinated biphenyl (PCB) 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) including loss of use resulting therefrom, but only to the extent caused in whole or in part by negligent acts or omissions of the Owner, anyone directly or indirectly employed by the Owner or anyone for whose acts the Owner 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 which would otherwise exist as to a party or person described in this Subparagraph 10.1.4.

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 or the Contractor's Subcontractors or Sub-subcontractors; 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 give notices and comply with applicable laws, ordinances, rules, 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 erect and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent sites and utilities.

10.2.4 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 Clauses 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 Clauses 10.2.1.2 and 10.2.1.3, except damage or loss 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 Paragraph 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 load or permit any part of the construction or site to be loaded so as to endanger its safety.

10.3 EMERGENCIES

10.3.1 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 Paragraph 4.3 and Article 7.

ARTICLE 11

INSURANCE AND BONDS

11.1 CONTRACTOR'S LIABILITY INSURANCE

11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

- .1 claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

- .2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;
- .3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
- .4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor, or (2) by another person;
- .5 claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- .6 claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle; and
- .7 claims involving contractual liability insurance applicable to the Contractor's obligations under Paragraph 3.18.

11.1.2 The insurance required by Subparagraph 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

11.1.3 Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These Certificates and the insurance policies required by this Paragraph 11.1 shall contain a provision that coverages afforded under the policies will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Subparagraph 9.10.2. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance. Optionally, the Owner may purchase and maintain other insurance for self-protection against claims which may arise from operations under the Contract. The Contractor shall not be responsible for purchasing and maintaining this optional Owner's liability insurance unless specifically required by the Contract Documents.

11.3 PROPERTY INSURANCE

11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance in the amount of the initial Contract Sum as well as subsequent modifications thereto for the entire Work at the site on a replacement cost basis without voluntary deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Paragraph 9.10 or until no person or entity

other than the Owner has an insurable interest in the property required by this Paragraph 11.3 to be covered, whichever is earlier. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

11.3.1.1 Property insurance shall be on an all-risk policy form and shall insure against the perils of fire and extended coverage and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, false-work, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's services and expenses required as a result of such insured loss. Coverage for other perils shall not be required unless otherwise provided in the Contract Documents.

11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor, then the Owner shall bear all reasonable costs properly attributable thereto.

11.3.1.3 If the property insurance requires minimum deductibles and such deductibles are identified in the Contract Documents, the Contractor shall pay costs not covered because of such deductibles. If the Owner or insurer increases the required minimum deductibles above the amounts so identified or if the Owner elects to purchase this insurance with voluntary deductible amounts, the Owner shall be responsible for payment of the additional costs not covered because of such increased or voluntary deductibles. If deductibles are not identified in the Contract Documents, the Owner shall pay costs not covered because of deductibles.

11.3.1.4 Unless otherwise provided in the Contract Documents, this property insurance shall cover portions of the Work stored off the site after written approval of the Owner at the value established in the approval, and also portions of the Work in transit.

11.3.2 **Boiler and Machinery Insurance.** The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

11.3.3 **Loss of Use Insurance.** The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or for other special hazards be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, adjoining 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, the Owner shall waive all rights in accordance with the terms of Subparagraph 11.3.7 for damages caused by fire or other perils covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Paragraph 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be cancelled or allowed to expire until at least 30 days' prior written notice has been given to the Contractor.

11.3.7 Waivers of Subrogation. 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, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by property insurance obtained pursuant to this Paragraph 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

11.3.8 A loss insured under Owner's property insurance 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 Subparagraph 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Paragraph 4.5. If after such loss no other special agreement is made, replacement of damaged property shall be covered by appropriate Change Order.

11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection be made, arbitrators shall be chosen as provided in Paragraph 4.5. The Owner as fiduciary shall, in that case, make settlement with insurers in accordance with directions of such arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

11.3.11 Partial occupancy or use in accordance with Paragraph 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

11.4 PERFORMANCE BOND AND PAYMENT BOND

11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.4.2 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 permit a copy to be made.

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 required in writing by the Architect, be uncovered for the Architect's observation 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 which the Architect has not specifically requested to observe 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, costs of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work is not in accordance with the Contract Documents, the Contractor shall pay such costs unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

12.2 CORRECTION OF WORK

12.2.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby.

12.2.2 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 Subparagraph 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year 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 performance of the Work. This obligation under this Subparagraph 12.2.2 shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.

12.2.3 The Contractor shall remove from the site portions of the Work which 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 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Paragraph 2.4. If the Contractor does not proceed with correction of such nonconforming Work within a reasonable time fixed by written notice from the Architect, the Owner may remove it and store the salvable materials or equipment at the Contractor's expense. If the Contractor does not pay costs of such removal and storage within ten days after written notice, the Owner may upon ten additional days' written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof, after deducting costs and damages that should have been borne by the Contractor, including compensation for the Architect's services and expenses made necessary thereby. If such proceeds of sale do not cover costs which the Contractor should have borne, the Contract Sum shall be reduced by the deficiency. If payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

12.2.5 The Contractor shall bear the cost of correcting destroyed or damaged construction, whether completed or partially completed, of the Owner or separate contractors caused by the Contractor's correction or removal of Work which is not in accordance with the requirements of the Contract Documents.

12.2.6 Nothing contained in this Paragraph 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the time period of one year as described in Subparagraph 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

12.3.1 If the Owner prefers to accept Work which 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

13.1.1 The Contract shall be governed by the law of the place where the Project is located.

13.2 SUCCESSORS AND ASSIGNS

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

13.3 WRITTEN NOTICE

13.3.1 Written notice shall be deemed to have been duly served if delivered in person to the individual or a member of the firm or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last business address known to the party giving notice.

13.4 RIGHTS AND REMEDIES

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

13.4.2 No 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 in writing.

13.5 TESTS AND INSPECTIONS

13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. 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 the Architect may observe such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Subparagraph 13.5.1, 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 the Architect may observe such procedures.

The Owner shall bear such costs except as provided in Subparagraph 13.5.3.

13.5.3 If such procedures for testing, inspection or approval under Subparagraphs 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, the Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses.

13.5.4 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.

13.5.5 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.

13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

13.6 INTEREST

13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may 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.

13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

13.7.1 As between the Owner and Contractor:

- .1 Before Substantial Completion.** As to acts or failures to act occurring prior to the relevant date of Substantial Completion, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than such date of Substantial Completion;
- .2 Between Substantial Completion and Final Certificate for Payment.** As to acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of issuance of the final Certificate for Payment; and
- .3 After Final Certificate for Payment.** As to acts or failures to act occurring after the relevant date of issuance of the final Certificate for Payment, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events not later than the date of any act or failure to act by the Contractor pursuant to any warranty provided under Paragraph 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Paragraph 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

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 days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor, for any of the following reasons:

- .1** issuance of an order of a court or other public authority having jurisdiction;
- .2** an act of government, such as a declaration of national emergency, making material unavailable;
- .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 Subparagraph 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents;
- .4** if repeated suspensions, delays or interruptions by the Owner as described in Paragraph 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; or
- .5** the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Subparagraph 2.2.1.

14.1.2 If one of the above reasons exists, the Contractor may, upon seven additional days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages.

14.1.3 If the Work is stopped for a period of 60 days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently 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' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Subparagraph 14.1.2.

14.2 TERMINATION BY THE OWNER FOR CAUSE

14.2.1 The Owner may terminate the Contract if the Contractor:

- .1** persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2** fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3** persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
- .4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to jus-

tify such action, 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' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 accept assignment of subcontracts pursuant to Paragraph 5.4; and
- .3 finish the Work by whatever reasonable method the Owner may deem expedient.

14.2.3 When the Owner terminates the Contract for one of the reasons stated in Subparagraph 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, such excess shall be paid to the Contractor. If such costs 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 Architect, 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 An adjustment shall be made for increases in the cost of performance of the Contract, including profit on the increased cost of performance, caused by suspension, delay or interruption. 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 this Contract.

14.3.3 Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee.

1. GENERAL:

1-01. AIA GENERAL CONDITIONS:

- A. The General Conditions of the Contract for Construction, Standard Form of the American Institute of Architects, Documents No. A-201, 1987 Edition, Articles 1 through 14 inclusive, accompanying the Specifications are hereby made a part of the Contract. The Contractor and each Subcontractor shall inform himself fully regarding these General Conditions, as unfamiliarity with them shall not relieve any Contractor from requirements contained therein.
- B. If any Article of the "AIA General Conditions", identified in Subparagraph A, above, is supplemented by these Supplementary General Conditions, the provisions of that Article, as supplemented shall remain in effect, unless otherwise modified or deleted by these Supplementary General Conditions.

2. SUPPLEMENTS TO THE GENERAL CONDITIONS:

2-01. ARTICLE 1 - CONTRACT DOCUMENTS:

- A. Paragraph 1.1.1 of Item 1.1 - The contract documents: Add the following sentence:

The Contract Documents shall include the Advertisement for Bids, the Instructions to Bidders, sample forms and all Addenda pertaining to these.
- B. Paragraph 1.3.1 of Item 1.3 - Ownership and Use of Documents: Delete this paragraph and insert the following:

1.3.1. All Drawings, Specifications and copies thereof furnished by the Architect are and shall remain the property of the Owner, pursuant to Education Code Section 17316. They are to be used only with respect to this Project and are not to be used on any other project. Submission 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 common law copyright or other reserved rights.

2-02. ARTICLE 1 - CONTRACT DOCUMENTS:

- A. Item 1.2 - Execution, Correlation and Intent: Add the following paragraph:

1.2.6. The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Architect access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown on mentioned in both. In case of difference between drawings and specification, the specifications shall govern.
- 1.2.7 In case of difference between small- and large-scale drawings, the large-scale drawings shall govern. Schedules on any contract drawing shall take precedence over conflicting information on that or any other contract drawing. On any of the drawings where a portion of the work is detailed or drawn out and the remainder is shown in outline, the parts detailed or drawn out shall apply also to all other like portions of the work.
- 1.2.8 Where the word "similar" appears on the drawings, it shall have a general meaning and not be interpreted as meaning identical, and all details shall be worked out in relation to their location and their connection with other parts of the work.

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1.2.9 In case of discrepancy either in the figures, in the drawings, or in the specification, the matter shall be promptly submitted to the Architect, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at his own risk and expense. The Architect shall furnish from time to time such detail drawings and other information as he may consider necessary, unless otherwise provided.

2-03. ARTICLE 2 - OWNER:

A. Item 2.2 - Information and Services Required of the Owner: Add the following paragraph:

2.2.8. **JOB PLANS AND SPECIFICATIONS:** The Inspector must have and keep in good condition at all times during the construction period, a complete set of stamped plans per Title 24, Part 1, specifications, addenda, and change orders, together with all codes and documents including Title 24, Parts 1 thru 5 but not limited to; which are referred to in the specifications and made a part thereof.

2-04. ARTICLE 3 - CONTRACTOR:

A. Item 3.3 - Supervision and Construction Procedures: Add the following paragraph:

3.3.5. **LAYING OUT OF WORK:** The Contractor, immediately upon entering project site for the purpose of beginning work, shall locate all general reference points and take such actions as are necessary to prevent their destruction; lay out his work, be responsible for all lines, elevations, and measurements of buildings, grading, utilities, and other work executed by him under this contract. He shall exercise precaution to verify figures shown on the drawings before laying out work and will be held responsible for any error resulting from his failure to exercise such precaution.

Dimensions of existing work shall be verified in the field by the Contractor.

B. Item 3.4 - Labor and Materials: Add the following paragraph:

3.4.3 The Contractor acknowledges that he is aware of and understands his obligations under California Labor Code Section 1720 - 1776, regarding payment of the generally prevailing wage rates, and 1777.5 - 1777.7, regarding employment of registered apprentices on public works, which are hereby incorporated herein by reference and made a part hereof.

Contractor and subcontractors shall be registered with the California Department of Industrial Relations (DIR) and pay the required fee to have DIR review contractor's certified payroll.

C. Item 3.4 - Labor and Materials: Add the following paragraph:

3.4.4. Contracts for work under this proposal will obligate the Contractor and Subcontractors not to discriminate in employment practices. The successful bidder must, if requested, submit a list of all Subcontractors who will perform work on the project and written, signed statements from authorized agents of the labor pools with which they will or may deal for employees on the work, together with supporting information to the effect that said labor pools practices and policies are in conformity with Executive Order Number 11246, and that said labor pools will affirmatively cooperate in or offer no hindrance to the recruitment, employment, and equal treatment of employees seeking employment and performing work under the Contractor or certification as to what efforts have been made to secure such statements when such agents or labor pools have filed or refused to furnish same prior to the award of the Contract.

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D. Item 3.4 - Labor and Materials: Add the following paragraph:

3.4.5. HOURS OF WORK: A legal day's work shall constitute not over, and at least eight (8) hours of work in one calendar day, in accordance with the provisions of the Labor Code of California, Articles 1 and 3 of Chapter 1, Part 7, Division II, which are hereby incorporated by reference and made a part hereof. Penalties for violation shall be set forth therein.

E. Item 3.5 - Warranty: Add the following paragraph:

3.5.2. WARRANTY: Besides special guarantees required elsewhere, the Contractor shall guarantee the work in general for one (1) year from the date of acceptance of the work by the Owner. The General Contractor shall execute and have each of his subcontractors execute two (2) copies of the guarantee and submit to the Architect prior to completion and filing the Notice of Substantial Completion.

F. Item 3.7 - Permits, Fees and Notices: Add the following paragraph:

3.7.5. The Contractor is required to obtain building permits: however, there is no charge for the permits.

2-05. ARTICLE 4 – ADMINISTRATION OF THE CONTRACT

A. Item 4.3.3. – Time Limits on Claims: Revise to read as follows: Claims by either party must be made within 5 days after occurrence of the event giving rise to such Claim.. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in 5 days.

2-05 ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY:

A. Item 10.2 - Safety of Persons and Property: Add the following paragraph:

10.2.8. In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours.

B. Item 10.2 - Safety of Persons and Property: Add the following paragraph:

10.2.9. The duty of the Architect or Engineers to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

C. Item 10.3 - Emergencies: Add the following paragraph:

10.3.2. In case of extreme emergency which would include danger to human life or the structure, the Owner, Contractor and Architect, or their authorized representatives, have the authority to "stop the work" of this project until such "danger" has been eliminated and that no further danger exists. Otherwise, any stoppage of the work will be in accordance with Article 3.3.1 of the General Conditions.

2-06. ARTICLE 11 - INSURANCE AND BONDS:

A. Delete all of the text of Article 11 of the "A.I.A. General Conditions" and insert the following:

Item 11.1 – General:

- 11.1.1 Prior to commencement of Work, Contractor shall maintain the following insurance coverages and minimum limits until the earlier of final completion of the Work or Termination of this Contract except for Products and Completed Operations coverage as described in the sections below. The minimum limits of coverage required by this Agreement may be satisfied by a combination of primary and Excess/Umbrella insurance policies provided that the form of the Excess/Umbrella coverage follows the form of the primary liability insurance. Contractor shall bear all cost for payment of insurance premiums and any and all deductibles or self-insurance retentions under its policies and shall remain solely and fully liable for the full amount of any claim or item not compensated by insurance.

11.2 – *Minimum Scope of Insurance*11.2.1 **Coverage shall be at least as broad as:**

- Liability,
owned,
and
1. Commercial General Liability on an occurrence form (no sunset clauses). Liability deductible or Self-Insured Retention not to exceed \$5,000. Claims Made or Modified Occurrence Liability coverage will not be accepted. Coverage shall be at least as broad as ISO form CG0001. Products and Completed Operations coverage shall continue for three (3) years after the earlier of Final Completion of the Work, or Termination of this Agreement.
 2. Umbrella/Excess Liability insurance following form of the primary General Auto Liability and Employer's Liability insurance.
 3. Business Automobile Liability insurance including coverage for owned, non-owned, and hired vehicles and trailers. Such insurance shall cover occurrences both at and away from the Project Site.
 4. Worker's Compensation insurance as required by the State of California and Employer's Liability Insurance.
 5. Builder's Risk (Course of Construction). Deductible not to exceed \$2,500.
 6. Performance and Payment Bonds.

Item 11.3 – *Minimum Limits of Insurance*11.3.1 **Contractor shall maintain limits no less than:**

1. Minimum General Liability Limits and Umbrella/Excess Liability
2. Automobile Liability: \$1,000,000 Per Accident for Bodily Injury and Property Damage
3. Worker's Compensation: As required by the State of California
4. Employer's Liability: \$1,000,000 Per Accident for Bodily Injury or Disease
5. Builder's Risk: Completed Value of the Project with no Coinsurance Penalty

Item 11.4 – *Insurance Provisions*

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- 11.4.1 The general liability policy is to contain, or be endorsed to contain, the following provisions:
- employees,
endorsement
“ongoing”
1. **Additional Insured:** The **Owner**, its elected or appointed officials, agents and volunteers are to be covered as Additional Insured’s (utilizing Form CG2010 11/85 edition or an acceptable equivalent) by an endorsement to the general liability policy. A CG2010 11/85 acceptable equivalent is an additional insured endorsement that includes the named insured’s operations and completed operations.
 2. **Primary Insurance:** For any claims related to this project, the Contractor’s Insurance coverage shall be primary insurance as respects the **Owner**, its elected or appointed officials, employees, agents and volunteers. Any insurance or self-insurance maintained by the **Owner**, its elected or appointed officials, employees, agents and volunteers shall be excess of the Contractor’s insurance and shall not contribute with it.
 3. **Cancellation Provision:** Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled by either party, except after thirty (30) day’s prior written notice has been provided to the **Owner**.

11.4.2 – *Waiver of Subrogation*

The Contractor’s General Liability and Worker’s Compensation insurance policies shall provide a Waiver of Subrogation in favor of the **Owner**.

11.4.3 – *Builders Risk (Course of Construction) Insurance*

If and only if the Contract Sum exceeds \$250,000 at the time of award, Contractor shall procure and maintain Builder’s Risk insurance (all-risk, special form with valuation on a replacement cost basis) on a one hundred percent completed value of the project for the benefit of the **Owner**, and the Contractor and Subcontractor, as their interest may appear. The policy shall contain a clause which provides coverage until the building is accepted by the **Owner**. If the Builder’s Risk policy contains an occupancy provision, permission for early occupancy must be obtained from the insurance company. The Policy should include debris removal, collapse, theft, and transit coverage with no coinsurance penalty provisions. The Builder’s Risk Policy is primary and no insurance held or owned by the **Owner** shall be called upon to contribute to a loss.

11.4.4 *Contractor’s Property*

Contractor shall be responsible for and shall bear the risk of loss and damage to any property including but not limited to (1) tools and equipment of Contractor (owned or rented) and (2) any property for which it is responsible or that is in its care, custody and control, wherever located.

11.4.5 *Transit Insurance*

Where Contractor has responsibility to coordinate transportation of construction materials (whether ocean, air or inland transit), Contractor shall bear responsibility for providing transit coverage on an all-risk basis, including lightering operations, loading and unloading at each point of delivery, including final destination, unless

**SECTION 00 73 00
SUPPLEMENTARY CONDITIONS**

total risk of loss in transit is borne by the shipper or supplier, or Owner provides notification that it will carry such coverage. Such coverage shall provide a limit of full replacement value of each conveyance. Any marine inspections and/or survey fees under this coverage shall be for the account of Contractor.

11.4.6 *Worker's Compensation*

Before the Contract is entered into, the Bidder to whom it is awarded shall furnish to

the **Owner** satisfactory proof that he and all Subcontractors he intends to employ have taken out, for the period covered by the proposed Contract, full compensation

insurance and Employer's Liability with limits of at least \$1,000,000 with an insurance carrier satisfactory to the Owner for all persons whom they may employ in carrying out the work contemplated under this Contract in accordance with the Act of the Legislature of the State of California, known as the "Workers' Compensation Insurance and Safety Act" approved May 26, 1913, and all Acts amendatory or supplemental thereto. Such insurance shall be maintained in full force and effect during the period covered by the Contract. In the event the Contractor is self-insured, he shall furnish a Certificate of Permission to Self-Insure, signed by the Department of Industrial Relations Administration of Self-Insurance, Sacramento, California.

If the Contractor fails to maintain such insurance, the **Owner** may take out compensation insurance to cover any compensation which the **Owner** might be liable to pay under the provisions of said Act as amended, by reason of any employee of the Contractor being injured or killed, and deduct and retain the amount of the premiums for such insurance from any sums due the Contractor under the Contract.

If an injury occurs to any employee of the Contractor for which the employee, or the employee's dependents in the event of the employee's death, is entitled to compensation from the **Owner** under the provisions of said Act as amended, or for which compensation is claimed from the **Owner**, the **Owner** may retain out of the sums due the Contractor under this Contract, an amount sufficient to cover such compensation, as fixed by said Act as amended, until such compensation is paid, or until it is determined that no compensation is due, and if the **Owner** is compelled to pay such compensation, it will deduct and retain from such sums the amount so paid.

The policies represented by the certificates must contain the provision (and the certificates must so state) that the insurance cannot be cancelled until thirty (30) days after written notice of intended revocation has been given to the **Owner** by Certified Mail.

11.4.7 - *Indemnity*

Contractor shall indemnify, hold harmless and defend **Owner** and its elected or appointed officials, agents and employees from and against all claims, damages, losses and expenses, including reasonable costs and attorney's fees, arising out

of or

resulting from Contractor's performance of the Work, or work performed by Contractor's agents or employees, or subcontractors employed on the project, their agents or employees, or products installed on the project by Contractor or subcontractors, excepting only such injury or harm as may be caused solely and exclusively by **Owner's** fault or negligence. Such indemnification shall extend to all claims, demands, or liabilities occurring after completion of the project as well as during the progress of work.

11.4.8 – Acceptability of Insurers

All required insurance must be written by an admitted company licensed to do business in the State of California at the time the policy is issued. All required Insurance as set forth in this Contract shall be underwritten by a company with a balance sheet strength, operating performance and business profile that are equal to or exceed an A VIII rating as listed in the A.M. Best Insurance Guide's latest edition. On a case-by-case basis, the **Owner** may accept insurance written on a company listed on the State of California Department of Insurance List of Eligible Surplus Lines ("LESLI List") with a rating of A VIII or above as listed in Best's Insurance Guide's latest edition. Exception may be made for Workers' Compensation Insurance provided by the State Compensation Insurance Fund when not specifically rated.

11.4.9 – Subcontractors

Contractor shall require all Subcontractors of any tier that may work on or in connection with the Agreement to maintain the coverages required in this Contract; provided however, that Contractor may vary the limits of such coverage of subcontractors depending on the services provided, but such limits shall be comparable to those customarily provided by others within similar size and scope of business. In no event shall the insurance requirements be deemed to limit the liability or responsibility of Contractor or any of its Subcontractors to Owner.

Contractor shall require all tiers of Subcontractors to waive the rights or recovery against Owner, its elected or appointed officials, employees, agents and volunteers. Contractor shall be responsible for any loss resulting from the failure of any Subcontractor to maintain sufficient insurance.

Subcontractor shall be responsible for and shall bear the risk of loss and damage to any property including but not limited to (1) tools and equipment of subcontractor (owned or rented) and (2) any property for which it is responsible or that is in its care, custody and control, wherever located.

11.4.10 – Proof of Insurance

Contractor shall furnish the **Owner** with original certificates and amendatory endorsements effecting coverage required by this contract. All certificates and endorsements are to be received and approved by the **Owner** before work commences. However, failure to do so shall not operate as a waiver of these insurance requirements. If the Contractor fails to maintain such insurance as specified by this Contract, the **Owner** may take out such insurance to cover any damages of the above mentioned classes for which the **Owner** might be held liable on account of the Contractor's failure to pay such damages, and deduct and retain the amount of the premium from any sums due the Contractor under the Contract.

The **Owner** reserves the right to require complete, certified copies of all required insurance policies, including endorsements effecting the coverage required by these specifications at any time.

Mail all certificates and endorsements to:

County of Siskiyou
Attn: Amanda Kimball
190 Green Horn Road
Yreka, CA 96097

Item 11.5 – Performance Bond & Payment Bond

**SECTION 00 73 00
SUPPLEMENTARY CONDITIONS**

Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum. The surety must be an admitted surety insurer in the State of California. These bonds shall be maintained for the life of the Contract and one year after the date of filing the Notice of Completion.

The Contractor shall deliver the required bonds to the **Owner** not later than ten days following the date the Agreement is entered into. If the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to commencement of Work, submit evidence satisfactory to the **Owner** that such bonds will be furnished.

The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney, and to have the signature acknowledged by a notary public.

Item 11.6 - Safety

In accordance with generally accepted construction practices, the Contractor will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the Work. The duty of the Architect or Engineers to conduct construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's safety measures, in, on, or near the construction site.

2-08. ARTICLE 14 - TERMINATION OF THE CONTRACT:

A. Item 14.2 - Termination by the Owner: Add the following paragraph:

14.2.5. If the unpaid balance of the Contract Sum exceeds the costs of finishing the work, including compensation for the Architect's additional services made necessary thereby, such excess shall be paid to the Contractor. If such costs exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Owner shall be certified by the Architect, upon application, and in the manner provided in Paragraph 9.4, and the obligation for payment shall survive the termination of the remainder of the Contract.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Project consists of construction of the Board of Supervisors Chambers Remodel as indicated in Contract Documents.

1.2 REQUIREMENTS INCLUDED

- A. This section includes administrative provisions:
 - 1. Work by Owner.
 - 2. Field engineering.
 - 3. Owner furnished, Contractor installed products.

1.3 WORK SEQUENCE

- A. Coordinate construction schedule and operations with Owner.
- B. Construct the Work in a manner to provide for public convenience. Do not close off public use of facilities, unless authorized by the owner.

1.4 CONTRACTOR USE OF PREMISES

- A. Limit use of premises for Work and construction operations and to allow for work by other contractors.
- B. Coordinate use of premises and access to site under direction of Owner.
- C. Use of sites:
 - 1. Access to Site: Lane Street or Fourth Street not Butte Street or S. Oregon Street.
 - 2. Construction Operations: Limited to areas noted on Drawings and coordinated with Owner.
 - 3. Time Restrictions for Performing Work: None
 - 4. Utility Outages and Shutdown: Approved by Owner. Provide minimum 48 hours notice of proposed shutdowns

1.5 FIELD ENGINEERING

- A. Provide field engineering services; establish lines and levels by use of recognized engineering survey practices.
- B. Locate and protect control and reference points.

1.6 REGULATORY REQUIREMENTS AND REFERENCE STANDARDS

- A. Regulatory Requirements:
 - 1. Architect has contacted governing authorities and reviewed design requirements of local, state and federal agencies for applicability to Project.
 - 2. Contractor shall be responsible for contacting governing authorities directly for necessary information and decisions bearing upon performance of Work.
- B. Reference Standards:

**SECTION 01 11 00
SUMMARY OF WORK**

1. For Products specified by association or trade standards, comply with requirements of referenced standard, except when more rigid requirements are specified or are required by applicable codes.
2. Applicable date of each standard is that in effect as of date on proposal or date on Contract where no proposal is available, except when a specific date is specified.

1.7 OWNER FURNISHED, CONTRACTOR INSTALLED PRODUCTS

- A. Refer to Drawings.

END OF SECTION

PART 1 - GENERAL**1.1 SUMMARY**

- A. Documentation of Change in Contract Sum/Price and Contract Time.
- B. Change Procedures.
- C. Stipulated Price Change Order.
- D. Unit Price Change Order.
- E. Time and Material Change Order.
- F. Execution of Change Orders.
- G. Change Order Breakdown / Markup

1.2 DOCUMENTATION OF CHANGE IN CONTRACT SUM/PRICE AND CONTRACT TIME

- A. Maintain detailed records of work done on a time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.
- B. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation. At a minimum, documentation shall include:
 - 1. Origin and date of claim.
 - 2. Dates and times work was performed, and by whom.
 - 3. Time records and wage rates paid
 - 4. Quantities of products, labor, and equipment.
 - 5. Taxes, insurance and bonds.
 - 6. Overhead and profit (See Paragraph 1.9 Below)
 - 7. Justification for any change in Contract Time with sufficient detail to demonstrate how the change affected the critical path.
 - 8. Credit for deletions from Contract, similarly documented.
 - 9. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.3 CHANGE PROCEDURES

- A. The Architect will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by AIA A201 by issuing supplemental instructions on AIA Form G710.
- B. The Architect may issue a Change Order Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit an estimate.
- C. The Contractor may propose a change by submitting a request for change to the Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 62 00.

1.4 STIPULATED SUM PRICE CHANGE ORDER

- A. Based on Change Order Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect.

1.5 UNIT PRICE CHANGE ORDER

- A. For pre determined unit prices and quantities; the Change Order will be executed on a fixed unit price basis.
- B. For unit costs or quantities of units of work that are not pre determined, execute Work under a Construction Change Authorization.
- C. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

1.6 TIME AND MATERIAL CHANGE ORDER

- A. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- B. Architect will determine the change allowable in Contract Sum/Price and Contract Time as provided in the Contract Documents.
- C. Maintain detailed records of work done on Time and Material basis.
- D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.7 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- B. All Change Orders shall be approved by the Owner, Architect, Contractor.

1.9 CHANGE ORDER BREAKDOWN/MARKUPS

- A. The Contractor's written response to all change order requests (CORs) shall be formatted with an itemized breakdown of all increases or decreases in the **cost** of the Contractor's and all Subcontractor's work. *Cost means an itemized breakdown of all labor (by crafts), materials, sales taxes, equipment rentals, etc. for each portion of the work which comprises the change order including any Subcontractors itemized breakdowns, plus mark-up not exceeding that described in paragraph B below, which represent all profits, overhead, and administration costs.* Contractor shall provide at least the following detail:
 - 1. Material quantities and unit cost.
 - 2. Labor costs (identified with specific item of material to be placed or operation to be performed).
 - 3. Construction equipment.
 - 4. Overhead.
 - 5. Profit.
 - 6. Taxes.

SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES

- B. The mark-up on work will be limited to the following and shall represent all profits, overhead and administration costs. No additional mark-ups will be allowed. On proposals covering both increases and decreases in the amount of the contract the mark-up will be computed on the net change only. On proposals for decreases in the amount of the contract the mark-up will be part of the decrease in direct cost.

1. Change Orders of \$0 - \$5,000:

- a) Fifteen percent (15%) of the cost of that portion of the change order to be performed by the General Contractor with its own forces.
- b) Fifteen percent (15%) of the cost of that portion of the change order to be performed by a subcontractor with its own forces, plus five percent (5%) for the General Contractor. Total combined General Contractor and Subcontractor mark-up shall not exceed twenty percent (20%).
- c) Fifteen percent (15%) of the cost of that portion of the change order to be performed by a lower tier Subcontractor with its own forces, plus five percent (5%) for the Subcontractor, plus five percent (5%) for the General Contractor. Total combined General Contractor, Subcontractor, and lower tier Subcontractor mark up shall not exceed twenty-five percent (25%).
- d) All mark-ups to be calculated on actual construction costs, not marked up figures.

2. Change Orders of \$5,001- \$30,000:

- a) Thirteen percent (13%) of the cost of that portion of the change order to be performed by the General Contractor with its own forces.
- b) Twelve percent (12%) of the cost of that portion of the change order to be performed by a subcontractor with its own forces, plus four percent (4%) for the General Contractor. Total combined General Contractor and Subcontractor mark-up shall not exceed seventeen percent (16%).
- c) Twelve percent (12%) of the cost of that portion of the change order to be performed by a lower tier Subcontractor with its own forces, plus four percent (4%) for the Subcontractor, plus four percent (4%) for the General Contractor. Total combined General Contractor, Subcontractor, and lower tier Subcontractor mark-up shall not exceed twenty percent (20%).
- d) All mark-ups to be calculated on actual construction costs, not marked up figures.

3. Change Orders of \$30,001 or more:

- a) Ten percent (10%) of the cost of that portion of the change order to be performed by the General Contractor with its own forces.
- b) Ten percent (10%) of the cost of that portion of the change order to be performed by a subcontractor with its own forces, plus three percent (3%) for the General Contractor. Total combined General Contractor and Subcontractor mark-up shall not exceed seventeen percent (13%).
- c) Ten percent (10%) of the cost of that portion of the change order to be performed by a lower tier Subcontractor with its own forces, plus three percent (3%) for the Subcontractor, plus three percent (3%) for the General Contractor. Total combined General Contractor, Subcontractor, and lower tier Subcontractor mark-up shall not exceed sixteen percent (16%).
- d) All mark-ups to be calculated on actual construction costs, not marked up figures.

- C. Costs of change order work shall not include costs of any of the following:
1. Superintendent(s) – unless performing physical work associated with the change order
 2. Assistant Superintendent(s) – unless performing physical work associated with the change order
 3. Project Engineer

**SECTION 01 26 00
CONTRACT MODIFICATION PROCEDURES**

4. Project Manager
5. Scheduler
6. Estimator
7. Drafter or Detailer
8. As-built Plans
9. Small Tools (replacement value that does not exceed \$800)
10. Office expenses including staff, materials, and supplies
11. Workman's Compensation and Public Liability Insurance
12. On-site or off-site trailer and storage rental and expenses
13. Site fencing
14. Utilities, including gas, electric, sewer, water, telephone, fax or copier equipment
15. Data processing personnel and equipment
16. Home office overhead
17. Vehicles generally used by contractor staff unless it can be demonstrated that the vehicle was uses specifically to perform work necessitated by the change order

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section covers general requirements for Contractor's Requests for Interpretation (RFIs).

1.2 CONTRACTORS REQUESTS FOR INTERPRETATION

- A. Submit a Request for Interpretation to the Architect when:
1. An unforeseen condition or constructability question occurs.
 2. Questions regarding information in the Contract Documents arise.
 3. Information not found in the Contract Documents is required.
- B. When possible, request such clarification in writing at the next scheduled Project meeting. When the RFI is answered at the Project meeting, number the RFI and enter the response into the meeting minutes.
1. When the urgency of the need, or the complexity of the item makes clarification at the next scheduled Project meeting impractical, prepare and submit a formal written RFI to the Architect without delay.
- C. Submit RFIs within a reasonable time frame so as not to interfere with or impede the progress of the work. Keep the number of RFIs to a minimum. .
1. When an answer to an RFI has an effect on cost or time, notify the Architect and Owner in accordance with the Contract Documents at the time of submittal. Notification shall occur prior to commencing such work, so that the change order process can be initiated.
 2. At the time of submitting an RFI, alert the Architect to the time available before the response will cause an impact to the Project.
- D. Submit the RFI through Alliance2Build ® Project Collaboration System:
1. Submit an electronic Request for Interpretation by logging into Alliance system and selecting the link "Submit RFI" on the Project Home Page. The next consecutive number will be assigned automatically. Fill in the text boxes with the following information:
 - a. Reference such as Drawing numbers, Detail references or specification numbers, as appropriate.
 - b. Subject of RFI in a concise form describing the nature of the problem
 - c. Importance factor with four available options: Urgent, High, Medium and Low
 - d. Clear, concise explanation of information or clarification requested.
 - e. Contractor's Suggested Resolution for the described request, if appropriate.
 - f. Attach files, drawing references, sketches, images, any types of electronic information that pertain to the request.
- E. Allow a minimum of 5 working days for review and response time; the response time will be increased if inadequate information is provided, when the RFI is submitted out-of-sequence, or if in the opinion of the Architect, more time is needed to answer the RFI.

1.3 QUALITY ASSURANCE

- A. Carefully study the Contract Documents to assure that the requested information is not available therein. RFIs requesting information available in the Contract Documents may not be answered by the Architect.
- B. In all cases where an RFI is issued to request clarification of coordination issues, for example, pipe and duct routing, clearances, specific locations of work shown diagrammatically, and similar items, the Contractor shall fully lay-out a suggested solution using drawings or sketches drawing to scale and submit same with the RFI. An RFI which fails to include a suggested solution will not be answered.

**SECTION 01 26 13
REQUESTS FOR INTERPRETATION**

- C. Do not use RFI for the following purposes:
 - 1. To request approval of submittals.
 - 2. To request approval of substitutions.
 - 3. To request changes to the Contract Documents to confirm action taken by the Contractor for requested changes/substitutions to the Contract Documents.

- D. If the Contractor believes that a clarification by the Architect may result in a change in Contract price, the contractor shall not proceed with the work indicated by the RFI until a change order or other acceptable tracking device is prepared and approved by the Owner.
 - 1. If the Contractor believes that a clarification by the Architect results in additional cost, the Contractor shall identify in the RFI the basis of the Contractor's bid as it relates to the RFI.
 - 2. Answered RFIs shall not be construed as an approval to perform extra work.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Procedures for preparation and submittal of Applications for Payment

1.2 SCHEDULE OF VALUES

- A. Submit typed schedule on AIA Form G703 or another Owner and Architect pre-approved 8-1/2" by 11" paper format; Contractor's standard media-driven printout will be considered on request. Submit within 15 days after award of Contract.
- B. Format: Table of Contents of this Project Manual, with modifications as pre-approved by Owner and Architect; identify each line item with number and title of major Specification sections.
- C. Include in each line item a directly proportional amount of Contractor overhead and profit.
- D. Revise schedule to list change orders for each Application for Payment.

1.3 FORMAT

- A. AIA G702 Application and Certificate for Payment: Application for Payment including continuation sheets when required.
- B. For each item, provide a column for listing: Item Number; Description of work; Scheduled Value, Previous Applications: Work in Place and Stored Materials under this Application: Authorized Change Orders; Total Completed and Stored to Date of Application; Percentage of Completion; Balance to Finish; and Retainage.
- C. Prior to submitting the first application for payment submit a schedule of values, per paragraph 1.2 of this section.
- D. Provide spaces for signatures of the following:
 - 1. Contractor
 - 2. Architect
 - 3. Project Inspector
 - 4. Owner

1.4 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- D. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- E. Certificates for payment as recommended by the Architect or the Owner shall include a 10% retention that will be held by the Owner until such a time as outlined in Section 01 77 00.

**SECTION 01 29 00
PAYMENT PROCEDURES**

- F. Prepare Application for Final Payment as specified in Section 01 77 00.

1.5 PAYMENT APPLICATION SUBMITTAL PROCEDURES

- A. Review Pay Application with Project Inspector prior to submitting to Architect.
- B. Submit three copies of each Application for Payment or submit through Alliance2Build .
- C. Submit an updated construction schedule with each Application for Payment.
- D. Payment Period: Monthly.

1.6 SUBSTANTIATING DATA

- A. When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show Application number and date, and line item by number and description.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

PART 1 GENERAL**1.1 SECTION INCLUDES**

- A. Coordination.
- B. Cutting and patching.
- C. Preconstruction conference.
- D. Site mobilization conference.
- E. Progress meetings.
- F. Preinstallation conferences.

1.2 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
 - 1. Coordinated shop drawing reflecting the multiple trade coordination shall be prepared with any minor modifications documented and submitted as a record document per Section 01 77 00.
 - 2. The Contractor is responsible for translating the data coming to and from the format provided by the Architect without loss of data integrity. Architect will only receive data in the AutoCAD format in which the background(s) are provided.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean up of Work of separate Sections in preparation for Substantial Completion.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.4 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements which affects:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.

**SECTION 01 31 00
PROJECT MANAGEMENT COORDINATION**

3. Efficiency, maintenance, or safety of element.
 4. Visual qualities of sight-exposed elements.
 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
1. Fit the several parts together, to integrate with other Work.
 2. Uncover Work to install or correct ill-timed Work.
 3. Remove and replace defective and non-conforming Work.
 4. Remove samples of installed Work for testing.
 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods which will avoid damage to other Work, and provide proper surfaces to receive patching and finishing.
- E. Cut rigid materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- J. Identify any hazardous substance or condition exposed during the Work to the Architect/Engineer for decision or remedy.

1.5 PRECONSTRUCTION CONFERENCE

- A. Architect will schedule a conference after Notice of Award.
- B. Attendance Required: Owner, Architect, and Contractor's Superintendent and major subcontractors.
- C. Agenda:
1. Execution of Owner-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of Schedule of Values.
 5. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
 6. Procedures and processing of submittals, substitutions, applications for payments, proposal request, Requests for Interpretation, Change Orders, record documents and Contract closeout procedures.
 7. Submission of Construction Schedule.
 8. Use of premises by Owner and Contractor.
 9. Owner's requirements.
 10. Construction facilities and controls provided by Owner.
 11. Temporary utilities provided by Owner.
 12. Survey layout.
 13. Security and housekeeping procedures.
 14. Procedures for testing.

1.6 PROGRESS MEETINGS

- A. Coordinate with Architect to schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Architect will prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within seven days to Contractor, Owner, participants, and those affected by decisions made.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems which impede planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.
 - 14. Inspection and acceptance of any equipment put into service during construction period.

1.7 PREINSTALLATION CONFERENCES

- A. When required in individual specification Section, convene a preinstallation conference at site prior to commencing work of the Section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific Section.
- C. Notify Architect seven days in advance of meeting date.
- D. Prepare agenda, preside at conference, record minutes, and distribute copies within seven days after conference to participants, with seven copies to Architect/Engineer.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

PART 2 PRODUCTS

\\Not Used

PART 3 EXECUTION

\\Not Used

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Construction Progress Documentation

1.2 CONSTRUCTION PROGRESS SCHEDULE

- A. Submit initial progress schedule in duplicate within 15 days after date established in Notice to Proceed for Architect review.
 1. First payment request will not be processed until construction schedule is received.
- B. Revise and resubmit as required by Architect.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a horizontal bar chart with separate line for each major section of Work or operation, identifying first work day of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and under Allowances.

PART 2 PRODUCTS

\\Not Used

PART 3 EXECUTION

\\Not Used

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes:
1. General Submittal Procedures
 2. Electronic Submittal Procedures
 3. Physical Submittal Procedure
 4. Contractor Responsibilities
 5. Product Data
 6. Shop Drawings
 7. Samples
 8. Manufacturer's Instructions
 9. Manufacturers' certificates.

1.2 DESCRIPTION

- A. Types of Submittals: Submittal procedures specified in this section include construction progress schedules, shop drawings, product data, samples, manufacturers' certificates, manufacturer's installation instructions, and agency deferred approvals.
- B. Intent: Architect's review of shop drawings is intended to be a preview of what the Contractor intends to provide, and will function as an effort to foresee unacceptable materials or assemblies and to avoid the possibility of their rejection at the Project Site. Architect will review submittals only for conformance with the design concept of the Project and with the information given in the Contract Documents.
- C. The Architect's review of shop drawings will be general and shall not be construed:
1. As permitting departure from the Contract requirements except as otherwise provided for under "substitution" provisions of Section 01 62 00;
 2. As relieving Contractor of responsibility for omissions or errors, including details, dimensions, materials, etc.;
 3. That review of a separate item indicates acceptance of an assembly in which the item functions. Architect will only review acceptance of an assembly in which the item functions. Architect will only review submittals required by Contract Documents for conformance with design concept of the Project and with the information given in the Contract Documents.

1.3 GENERAL SUBMITTAL PROCEDURES

- A. All submittals shall be made electronically through the Alliance2Build. Only Samples for verification should be submitted physically.
- B. Transmit each Sample submittal with AIA Form G810 or other Architect-accepted form.
- C. Sequentially number the submittals and transmittal forms as shown in each section requiring submittals with the project manual section number from which the submittal is being requested followed by the alphabetic suffix. (I.E. 01 33 00A) Resubmittals are to have original number followed by an underscore and an additional numerical suffix beginning with '1' and then consecutively thereafter with each resubmittal. (I.E. 01 33 00A_1)
- D. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.

SECTION 01 33 00
SUBMITTAL PROCEDURES

- E. Apply Contractor's stamp and signature or initial (electronically or physically) certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- F. Unless otherwise authorized by the Architect, all of the submittals required by a specification section shall be submitted together at the same time. Electronic submittals of product data, shop drawings, etc. may be submitted ahead of physical color samples with approval of the Architect. Submittals that do not include all required submittals for a given specification section will be returned without review.
- G. Schedule submittals to expedite the Project. **Late submittals shall not be considered a valid reason for product substitution.** Deliver Samples to architect at business address. Coordinate submission of related items.
- H. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- I. Substitutions must be submitted according to Section 01 62 00. Substitutions submitted without following this procedure will be rejected.
- J. Provide space for Contractor and Architect review stamps.
- K. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- L. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.4 ELECTRONIC SUBMITTAL PROCEDURES

- A. All submittals shall be submitted electronically.
- B. Submittals shall be uploaded to Alliance System in full size PDF format. Do not reduce Shop Drawings from original sheet size.
- C. One PDF copy of electronic submittals will be returned to the Contractor. Contractor may distribute submittals to the concerned parties electronically or physically. Any printing costs for physical distribution of submittals shall be borne by the Contractor. The Architect will not print copies for distribution.
- D. Follow all General Submittal Procedures as described above.

1.5 PHYSICAL SUBMITTAL PROCEDURES

- A. Samples and Color Charts shall be physical submittals with accurate representation of color and other physical characteristics.
- B. Submit a minimum of two (2) copies of each submittal including samples and resubmittals, as the Architect will retain a one.
- C. Follow all General Submittal Procedures as described above.

1.6 CONTRACTOR RESPONSIBILITIES

- A. Review shop drawings, product data and samples prior to submission.
- B. Determine and verify:
 - 1. Field measurements.

2. Field construction criteria.
 3. Catalog numbers and similar data.
 4. Conformance with specifications.
 5. Conformance with applicable codes.
- C. Submittals giving inadequate indication of contractor review and approval will be returned without review, for resubmission.
 - D. Coordinate each submittal with requirements of the Work and of the Contract Documents.
 - E. Notify the Architect in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.
 - F. Begin no fabrication or construction activity that requires submittals until return of submittals with Architect's stamp and initials or signature indicating finish review.
 - G. After Architect's final review, distribute copies.
- 1.7 PRODUCT DATA
- A. Submit all product data electronically.
 - B. Mark the submittal to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
 - C. After review, distribute in accordance with Submittal Procedures and provide copies for Record Documents as described in Section 01 77 00.
 - D. Show dimensions and clearances required.
- 1.8 SHOPDRAWINGS
- A. Submit all shop drawings electronically.
 - B. After review and distribution in accordance with Submittal Procedures, retain one copy of all reviewed shop drawings at the job and label them "PROJECT RECORD" as described in Section 01 77 00 Execution and Close-out Requirements.
- 1.9 SAMPLES
- A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Provide units identical with final condition of proposed materials or products for the work. Coordinate sample submittals for interfacing work.
 - B. Submit samples of finishes from the full range of manufacturers' standard colors textures, and patterns for Architect's selection.
 - C. Include identification on each sample, with full Project information.
 - D. Submit the number or samples specified in individual specification Sections; one of which will be retained by Architect.
 - E. Reviewed samples which may be used in the Work are indicated in individual specification Sections.

1.10 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.11 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect.

1.12 ACTION ON SUBMITTALS

- A. Architect's Action: Architect will review each submittal, mark with "Action" and where possible, return within a reasonable period of time from date of receipt. Where submittal must be held for coordination, Contractor will be so advised without delay. Action markings shall be interpreted as follows:
 1. No Exceptions Noted (NEN): Work may proceed, provided it complies with Contract Documents.
 2. Furnish As Corrected (FAC): Work may proceed, provided it complies with notations and corrections indicated on submittal and with Contract Documents.
 3. Revise and RESubmit (RES): Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking.
 4. Submit Additional Material (SAM): Do not proceed with work. Resubmit submittal with additional material as requested without delay to obtain a different action marking.
 5. REjected (REJ): Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking.
 6. See Summary Sheet (SSS): Refer to summary sheet attached to submittal for direction.
 7. Reviewed By Consultant (RBC): Submittal has been reviewed by the Architect's consultant. Refer to consultant submittal stamp for direction.
- B. Sample Architect's Action Stamp:

**SECTION 01 33 00
SUBMITTAL PROCEDURES**

Submittal Number: _____

No Exceptions Noted REJected

Furnish As Corrected See Summary Sheet

Revise And Resubmit Reviewed By Consultant

Submit Additional Material

Notes and/or comments made on shop drawings during this review do not relieve Contractor from compliance with requirements of the Contract Documents. This review has been performed by the Architect to check general conformance with the design concept of the project and general compliance with the information in the Contract Documents. Review of a specific item shall not include review of an assembly of which said item is a component. Contractor is responsible for confirming and correlating quantities and dimensions; selecting fabrication processes and construction techniques; coordinating his/her work with that of other trades and performing his/her work in a safe and satisfactory manner. This review shall not be interpreted as an approval of Contractor's means and methods of construction.

NICHOLS, MELBURG & ROSSETTO
300 Knollcrest Drive Redding, CA 96002

By:  _____ Date: _____

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. This section describes general quality control requirements.
 - 1. General quality control.
 - 2. Independent testing laboratory services.

1.2 QUALITY CONTROL, GENERAL

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.3 INDEPENDENT TESTING LABORATORY SERVICES

- A. Owner will employ and pay for services of an independent testing laboratory to perform inspections, tests, and other services required by applicable codes and various Specification sections.
 - 1. Owner or Architect may also require independent testing of items where doubts exists that product or system conforms to Contract Documents.
 - a. Contractor shall employ and pay for testing laboratory under above circumstances.
- B. Services shall be performed in accordance with requirements of governing authorities and with specified standards.
- C. Reports will be submitted to Owner and Architect in duplicate giving observations and results of tests, indicating compliance or non-compliance with specified standards and with Contract Documents.
 - 1. Where required, testing laboratory will submit copy of test results directly to enforcing agency.
- D. Contractor shall cooperate with testing laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.
 - 1. Notify Owner, Architect and testing laboratory sufficiently in advance of expected time for operations requiring testing services.

PART 2 PRODUCTS (NOT USED)**PART 3 EXECUTION (NOT USED)**

END OF SECTION

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PART 1- GENERAL

1.1 SUMMARY

- A. Definitions.
- B. Schedule of references.
- C. Schedule of governing codes.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents unless specifically noted.
- C. Obtain copies of standards when required by Contract Documents directly from publication source.

- D. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.
- G. Schedule of references is general in nature; disregard any reference standard listed that is not applicable to this project.

1.4 STANDARDS AND REGULATIONS

- A. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list.

- | | | |
|-----|---------|---|
| 1. | ADA | Americans with Disabilities Act (ADA) |
| 2. | ABA | Architectural Barriers Act (ABA) |
| 3. | CFR | Code of Federal Regulations |
| 4. | CRD | Handbook for Concrete and Cement |
| 5. | DOD | Department of Defense Military Specifications and Standards |
| 6. | DSCC | Defense Supply Center Columbus (See FS) |
| 7. | FED-STD | Federal Standard (See FS) |
| 8. | FS | Federal Specification |
| 9. | FTMS | Federal Test Method Standard (See FS) |
| 10. | ICC-ES | ICC Evaluation Service, Inc. |
| 11. | MIL | (See MILSPEC) |
| 12. | MIL-STD | (See MILSPEC) |
| 13. | MILSPEC | Military Specification and Standards |
| 14. | NES | National Evaluation Service (See ICC-ES) |
| 15. | UFAS | Uniform Federal Accessibility Standards |

- B. Schedule of Governing Codes:

- 1. California Code of Regulations (C.C.R.) PARTIAL LIST OF APPLICABLE CODES AS OF January 1, 2020*
 - a. 2022 California Administrative Code (CAC), Part 1, Title 24 CCR*

SECTION 01 42 00
REFERENCE STANDARDS

- b. 2022 California Building Code (CBC), Part 2, Title 24 CCR
(2021 International Building Code, Vol. 1 & 2, and 2022 California amendments)
 - c. 2022 California Electrical Code (CEC), Part 3, Title 24 CCR
(2021 National Electrical Code and 2022 California Amendments)
 - d. 2022 California Mechanical Code (CMC), Part 4, Title 24 CCR
(2021 IAPMO Uniform Mechanical Code and 2022 California amendments)
 - e. 2022 California Plumbing Code (CPC), Part 5, Title 24 CCR
(2021 IAPMO Uniform Plumbing Code and 2022 California amendments)
 - f. 2022 California Energy Code (CEC), Part 6, Title 24 CCR
 - g. 2022 California Fire Code (CFC), Part 9, Title 24 CCR
(2021 International Fire Code and 2022 California Amendments)
 - h. 2022 California Existing Building Code (CEBC), Part 10, Title 24 CCR
(2021 International Existing Building Code and 2022 California Amendments)
 - i. 2022 California Green Building Standards Code (CALGreen), Part 11, Title 24 CCR
 - j. 2022 California Referenced Standards Code, Part 12, Title 24 CCR
 - k. Title 19 CCR, Public Safety, State Fire Marshal Regulations
2022 ASME A17.1/CSA B44-13 Safety Code for Elevators and Escalators (per 2019 CBC Part 2 Ch 35)
 - 1) Note: Cal/OSHA Elevator Unit enforces CCR Title 8 and uses the 2004 ASME A17.1 by adoption
2. California Code of Regulations (C.C.R.) PARTIAL LIST OF APPLICABLE STANDARDS
- a. NFPA 13 - Standard for the Installation of Sprinkler Systems (CA amended) 2016 Edition
 - b. NFPA 14 - Standard for the Installation of Standpipe and Hose Systems (CA amended) 2016 Edition
 - c. NFPA 17 - Standard for Dry Chemical Extinguishing Systems 2017 Edition
 - d. NFPA 17A - Standard for Wet Chemical Extinguishing Systems 2017 Edition
 - e. NFPA 20 - Standard for the Installation of Stationary Pumps for Fire Protection 2016 Edition
 - f. NFPA 22 - Standard for Water Tanks for Private Fire Protection 2013 Edition
 - g. NFPA 24 - Standard for the Installation of Private Fire Service Mains and their Appurtenances (CA amended) 2016 Edition
 - h. NFPA 72 - National Fire Alarm and Signaling Code (CA amended) 2016 Edition
 - i. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2016 Edition
 - j. NFPA 2001 - Standard on Clean Agent Fire Extinguishing Systems (CA amended) 2015 Edition
 - k. UL 300 - Standard for Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment 2005 (R2010)
 - l. UL 464 - Audible Signaling Devices for Fire Alarm and Signaling Systems Including Accessories.2003 Edition
 - m. UL 521 - Standard for Heat Detectors for Fire Protective Signaling Systems 1999 Edition
 - n. UL 1971 - Standard for Signaling Devices for the Hearing Impaired 2002 (R2010)
 - o. ICC 300 - Standard for Bleachers, Folding and Telescopic Seating, and Grandstands 2017 Edition
 - 1) For a complete list of applicable NFPA standards refer to 2022 CBC (SFM) Chapter 35 and California Fire Code Chapter 80.

See California Building Code Chapter 35 for State of California amendments to the NFPA Standards.

*All parts of the 2022 California Building Code become effective January 1, 2020 except the effective date for the use of the 2022 Building Energy Efficiency Standards (Title 24, Part 1, Chapter 10) is January 8, 2022 and the effective date for the use of the California Administrative Code (Title 24, Part 1, Chapter 4) is January 8, 2022.

3. Standard Specifications for Public Works Constructions.

1.5 SCHEDULE OF REFERENCES

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities listed in the 2022 California Building Code Title 24, Part 2, Chapter 35.

1.6 JOB-SITE PUBLICATIONS

- A. Contractor shall keep a copy of Title 24, Parts 1 through 5, at the jobsite at all times.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

- 3.1 All work shall be done in accordance with the codes referenced in Section 1.4.B Schedule of Governing Codes, and as required by all agencies having jurisdiction.

END OF SECTION

PART 1 - GENERAL**1.1 SUMMARY**

- A. This section describes temporary construction facilities and temporary controls.
 - 1. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.
 - 2. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, construction aids, water control and construction waste management program.
 - 3. Construction Facilities: Access roads, parking, progress cleaning, Project identification, Field offices, telephone service, and storage.

1.2 ELECTRICITY AND LIGHTING

- A. Provide electrical service required for construction operations, with branch wiring and distribution boxes located to allow service and lighting by means of construction-type power cords.
 - 1. Contractor may connect to on site power source at no charge. Exercise measures to conserve energy.
 - 2. Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with CEC.
- B. Provide lighting for construction operations.

1.3 WATER AND SANITARY FACILITIES

- A. Contractor may connect to on site supply at no charge.
- B. Provide and maintain required sanitary facilities and enclosures.

1.4 PARKING

- A. Parking will be allowed in areas designated by Owner

1.5 CONSTRUCTION AIDS

- A. Noise, Dust and Pollution Control: Provide materials and equipment necessary to comply with local requirements for noise, dust and pollution control.
- B. Fire Protection: Maintain on-site fire protection facilities as required by applicable authorities and insurance requirements.
- C. Dewatering: Provide and operate drainage and pumping equipment; maintain excavations and site free of standing water.

1.6 BARRIERS

- A. Barriers: Provide barriers as required to prevent public entry to construction areas and to protect adjacent properties from damage from construction operations.
 - 1. Fence: Provide minimum 6 foot high commercial grade chain link or painted solid wood fence around construction site; equip with gates with locks.
- B. Barricades: Provide barricades as required by governing authorities.
- C. Tree Protection: No parking of vehicles will be allowed under trees. Provide barriers around trees and plants designated to remain; protect plants at their drip lines against vehicular traffic. Protect against stored materials, dumping, chemically injurious materials, and puddling or continuous running water.

1.7 CLEANING DURING CONSTRUCTION

- A. Control accumulation of waste materials and rubbish; recycle or dispose of off-site.

1.8 PROJECT IDENTIFICATION

- A. Project Sign: Provide minimum 32 square foot Project identification sign of wood frame and exterior grade plywood construction, painted, with exhibit lettering by professional sign painter.
 - 1. Design: As furnished by Architect.
 - 2. Submit to Owner and Architect additional names or changes proposed to Project sign for prior written approval.
 - 3. Erect on site at location established by Architect.
- B. Other Signs: Subject to approval of Architect and Owner.

1.9 FIELD OFFICES, COMMUNICATIONS, AND STORAGE

- A. Contractor's Option to Provide an Office: Provide weather-tight field office, with lighting, electrical outlets, data outlets, heating, and ventilating equipment, and equipped with furniture.
- B. Storage for Tools, Materials, and Equipment: Limit on-site storage to Project area; provide weather-tight storage, with heat and ventilation for products requiring controlled conditions.
 - 1. Maintain adequate space for organized storage and access.
 - 2. Provide lighting for inspection of stored materials.

PART 2 – PRODUCTS (not used)**PART 3 – EXECUTION****3.1 PROTECTION OF INSTALLED WORK**

- A. Protect installed Work and provide special protection where specified in individual specification Sections.

**SECTION 01 50 00
TEMPORARY FACILITIES & CONTROLS**

- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Prohibit traffic from landscaped areas.

3.3 SECURITY

- A. Provide security and facilities to protect Work, and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. Coordinate with Owner's security program.

3.4 CONSTRUCTION WASTE

- A. Construction Waste Management: Comply with applicable regulations for diverting Project waste from landfill; aim for waste management goal of 50% or higher.
 - 1. Effect optimum control of solid wastes.
 - 2. Prevent environmental pollution and damage.
- B. Reports: Provide as required by applicable authorities.
- C. Recycling: Implement recycling program that includes separate collection of waste materials of types as applicable to Project; recycling program to be applied by Contractors and subcontractors.
- D. Handling: Keep materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
 - 1. Clean materials contaminated prior to placing in collection containers.
 - 2. Arrange for collection by or delivery to appropriate recycling center or transfer station that accepts construction and demolition waste for purpose of recycling.
- E. Participate in Re-Use Programs: Rebates, tax credits, and other savings obtained for recycled or re-used materials shall accrue to Contractor.

3.5 REMOVAL

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion Inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities.
- C. Restore existing facilities used during construction to specified or original condition.

END OF SECTION

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PART 1 - GENERAL**1.1 SUMMARY**

- A. Provide products listed in Contract Documents, products by manufacturers listed in Contract Documents, and products meeting specified requirements.
 - 1. Contract Amount: Base on materials and products included in Contract Documents.
 - a. Where listed in Contract Documents, materials and products by manufacturers not listed shall not be used without Owner's and Architect's approval of Contractor's written request for substitution.
- B. Procedures are described for requesting substitution of unlisted materials in lieu of materials named in Specifications or approved for use in addenda.

1.2 CONTRACTOR'S OPTIONS

- A. Products Identified by Reference Standards: Select product meeting referenced standard for products specified only by reference standard.
- B. Named Manufacturers and Named Products: Select products of any named manufacturer meeting Specifications for products specified by naming one or more products or manufacturers.
- C. Substitutions for Named Manufacturers and Named Products: Submit request for substitution for products and for manufacturers not specifically named where products or manufacturers are named in Specifications.
- D. "Or Equal" Clauses: Submit request for substitution for product or manufacturer not specifically named in Specifications where terms "or equal", "or approved equal", or similar references are made.

1.3 SUBSTITUTIONS

- A. Architect/Engineer will consider requests for Substitutions only within 20 days after date established in Notice to Proceed.
- B. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- C. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- D. Substitution Submittal Procedure:
 - 1. Submit three physical copies or one electronic copy of Request for Substitution data for consideration. Submit completed "Product Substitution Request Form 01 62 33". Limit each request to one proposed Substitution.
 - 2. Submit shop drawings, product data, and certification test results attesting to the proposed product equivalence.
 - 3. The Architect will notify Contractor, in writing, of decision to accept or reject request.
 - 4. Incomplete substitution requests will be rejected without explanation.
 - 5. The Architect may reject any substitution request on the basis of aesthetics.

- E. "Approved Equal" or "Equal" shall mean in the opinion of the Architect.
- F. Substitutions will not be considered for acceptance when:
 - 1. They are indicated or implied on submittals without a formal request from Contractor.
 - 2. They are requested directly by a subcontractor or supplier.
 - 3. Acceptance will require substantial revision of Contract Documents.
- G. Substitute products shall not be ordered without written acceptance of Owner and Architect.
- H. Owner and Architect will determine acceptability of proposed substitutions and reserve right to reject proposals due to insufficient information.
- I. Any substitutions that change or affect the Structural, Access or Fire & Life Safety portions of the project construction documents shall be approved by DSA.

1.4 CONTRACTOR'S REPRESENTATION

- A. Requests constitute a representation that Contractor:
 - 1. Has investigated proposed product and determined it meets or exceeds, in all respects, specified product.
 - 2. Will provide same warranty or longer warranty for substitution as for specified product.
 - 3. Will coordinate installation and make other changes that may be required for Work to be complete in all respects.
 - 4. Waives claims for additional costs or time that subsequently become apparent.
 - 5. Will pay costs of changes to Contract Documents, Drawings, details and Specifications required by accepted substitutions.

1.5 ARCHITECT'S DUTIES

- A. Review Contractor's requests for substitutions with reasonable promptness.
 - 1. Architect will recommend that Owner accept or reject substitution request.
 - 2. Architect/Engineer will provide estimate of cost to be borne by Contractor for changes to Contract Documents, Drawings, details and Specifications that are required by substitutions. Written acceptance of charges by Contractor is required prior to any cost being incurred by the Architect/Engineer.
- B. Notify Contractor in writing of decision to accept or reject requested substitution.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

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**SECTION 01 62 33
PRODUCT SUBSTITUTION REQUEST FORM**

Project: Board of Supervisors Chambers Remodel
NMR Project No.: 22-6513

Substitution Request No.: _____
Submittal No.: _____
Date : _____

To: Nichols, Melburg & Rossetto Architects
300 Knollcrest Drive
Redding, CA 96002

From:

1) Specification Section of Item: _____

2) Specified Item: _____
Attach Product Data as required by Section 01 33 00

3) Proposed Substitution: _____
Attach Product Data as required by Sections 01 60 00 and 01 62 00

4) Itemized quality and performance comparison of proposed substitution with specified product. Indicate variations and appropriate specification section references. Attach summary.

5) Reason for submitting Substitution: _____

6) Does substitution effect dimensions shown on Drawings? Yes ___ No ___
If yes clearly indicate changes.

7) What effect does the substitution have on other trades or products?

8) What effect does the substitution have on the construction schedule?

PART 1 - GENERAL

1.1 SUMMARY

- A. This section describes execution requirements.
 - 1. Installer qualifications.
 - 2. Examination.
 - 3. Manufacturer's instructions.
 - 4. Installation.
 - 5. Final Cleaning.
 - 6. Protection.

1.2 INSTALLER QUALIFICATIONS

- A. Experienced Installers: Unless noted otherwise by a particular specification Section, installers shall have minimum of five years successful experience installing items similar to those required for Project, except for individuals in training under direct supervision of experienced installer.

1.3 EXAMINATION

- A. Acceptance of Conditions: Beginning installation of a product signifies installer has examined substrates, areas, and conditions for compliance with manufacturer requirements for tolerances and other conditions affecting performance.
- B. Field Measurements: Take field measurements as required to fit Work properly; recheck measurements prior to installing each product.
 - 1. Where portions of Work are to fit to other construction verify dimensions of other construction by field measurements before fabrication; allow for cutting and patching in order to avoid delaying Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

1.4 MANUFACTURERS' INSTRUCTIONS

- A. Manufacturer's Recommendations: When work is specified to comply with manufacturers' recommendations or instructions, distribute copies to persons involved and maintain one set in field office.
 - 1. Conform to requirements specified in Section 01 33 00 for submittal of recommendations or instructions to Architect; submit to Architect only where specified or where specifically requested.
- B. Perform work in accordance with details of recommendations and instructions and specified requirements.
 - 1. Should a conflict exist between Specifications and recommendations or instructions consult with Architect.

- C. Where manufacturer's information notes special recommendations in addition to installation instructions, comply with both recommendations and instructions.

1.5 INSTALLATION

- A. Pre-Installation Meetings: Installers and suppliers are to attend pre-installation meetings scheduled by Contractor.
- B. Comply with manufacturers written recommendations and installation instructions unless more restrictive requirements are specified.
- C. Locate Work and components accurately, in correct alignment and elevation.
 - 1. Make vertical work plumb and horizontal work level.
 - 2. Install components to allow space for maintenance and ease of removal for replacement.
- D. Install products at time and under conditions to ensure best possible results; maintain conditions required for product performance until Substantial Completion.
- E. Conduct operations so no part of Work is subject to damaging operations or loading in excess of that expected during normal conditions.
- F. Securely anchor permanent construction in place, accurately located and aligned with other portions of Work.
- G. Allow for movement including thermal expansion and contraction.
- H. Make joints of uniform width; arrange joints as indicated, for best visual effect where not otherwise indicated; fit exposed connections together to form hairline joints except where otherwise indicated.

1.6 FINAL CLEANING

- A. Cleaning During Construction: Specified in Section 01 50 00 - Temporary Facilities and Controls.
- B. Progress Cleaning: Keep installed areas clean using cleaning materials specifically recommended by manufacturers of product being cleaned; where not otherwise recommended use nontoxic materials that will not damage surfaces.
 - 1. Remove debris from concealed spaces before enclosing space.
 - 2. Supervise construction operations to assure no part of construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.
- C. Final Cleaning: Execute final cleaning at Substantial Completion.
 - 1. Clean surfaces exposed to view; remove temporary labels, stains and foreign substances.
 - 2. Clean site; sweep paved areas.
 - 3. Remove waste, surplus materials and rubbish from Project and site; recycle to maximum extent feasible.

1.7 PROTECTION

- A. Protect products subject to deterioration with impervious cover. Provide ventilation to avoid condensation and trapping water.
- B. Take care to use protective covering and blocking materials that do not soil, stain, or damage materials being protected.
- C. After installation, provide coverings to protect products from damage from traffic and construction operations, remove when no longer needed.
- D. Protect interior materials from water damage; immediately remove wet materials from site to prevent growth of mold and mildew on site.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION (not used)

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Contractor shall be responsible for cutting, fitting and patching required to complete Work and to:
 - 1. Make its parts fit together properly.
 - 2. Uncover work to provide for installation of ill-timed work.
 - 3. Remove and replace defective work.
 - 4. Remove and replace work not conforming to Contract Documents.
 - 5. Remove samples of installed work as required for testing.
 - 6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

1.2 REQUESTS FOR INFORMATION

- A. Submit a written request to Architect well in advance of executing cutting or alteration which affects:
 - 1. Work of Owner or separate contractor.
 - 2. Structural value or integrity of any element of Project.
 - 3. Integrity of weather-exposed or moisture-resistant elements.
 - 4. Efficiency, operational life, maintenance or safety of operational elements.
 - 5. Visual qualities of sight-exposed elements.
- B. Requests shall include:
 - 1. Identification of Project and description of affected work.
 - 2. Necessity for cutting or alteration.
 - 3. Effect on work of Owner or separate contractor.
 - 4. Effect on structural integrity, or weatherproof integrity of Project.
 - 5. Alternatives to cutting and patching.
 - 6. Cost proposal, when applicable.
 - 7. Written permission of separate contractor whose work will be affected.
 - 8. Description of proposed work including:
 - a. Scope of cutting, patching, alteration, or excavation.
 - b. Products proposed to be used.
 - c. Extent of refinishing to be included.

- C. Should conditions of Work or schedule indicate a change of products from original installation, Contractor shall submit request for substitution as specified in Section 01 62 00 - Product Options.
- D. Submit written notice to Architect designating date and time that work will be uncovered.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with Specifications and standards for each specific product involved.
- B. Where Specifications and standards have not been provided, provide materials and fabrication consistent with quality of Project and intended for commercial construction.
- C. Provide new materials for cutting and patching unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect existing conditions of Project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting installation of products, or performance of work.
- C. Report unsatisfactory or questionable conditions to Architect in writing; do not proceed with work until Architect has provided further instructions.

3.2 PREPARATION

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of Work.
 - 1. Provide services of licensed engineer for designing temporary support where required by applicable authorities for temporary supports and for shoring; submit engineering calculations directly to applicable authorities upon request.
- B. Protect other portions of Project from damage.

3.3 PERFORMANCE

- A. Execute cutting by methods that provide proper surfaces to receive installation of repairs and finishes.
 - 1. Execute excavating and backfilling by methods which will prevent settlement and which will prevent damage to other work.
- B. Employ same installer or fabricator to perform cutting and patching work as employed for new construction for:
 - 1. Weather-exposed or moisture resistant elements.
 - 2. Sight-exposed finished surfaces.

**SECTION 01 73 29
CUTTING & PATCHING**

- C. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- D. Restore work that has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.
- E. Fit work tight to pipes, sleeves, ducts, conduit and penetrations through surfaces.
- F. Refinish entire surfaces as necessary to provide even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish entire unit.

END OF SECTION

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PART 1 - GENERAL**1.1 SUMMARY**

- A. This section describes Contract closeout procedures.
 - 1. Substantial completion.
 - 2. Final completion.
 - 3. Project record documents.
 - 4. Material and finish data.
 - 5. Operation and maintenance data.
 - 6. Final Payment
- B. Refer to Section 01 78 36 for Warranty requirements.

1.2 SUBSTANTIAL COMPLETION

- A. When Contractor considers the Work or a designated portion thereof is substantially complete, submit written notice, with list of items to be completed or corrected.
 - 1. List ("Punch List"): Format pre-approved by Owner and Architect; tabular form with each space listed required.
- B. Within a reasonable time Owner will inspect status of completion and may add to "Punch List".
- C. Should Owner determine Work is not substantially complete, Contractor will be promptly notified in writing, giving reasons.
- D. Contractor shall remedy deficiencies and send a second written notice of substantial completion; Owner will re-inspect Work.
- E. When Owner determines Work is substantially complete, a letter of notification of Substantial Completion will be prepared.

1.3 FINAL COMPLETION

- A. When Work is complete, submit written certification indicating:
 - 1. Work has been inspected for compliance with Contract Documents.
 - 2. Work has been completed in accordance with Contract Documents and deficiencies listed (in 'Punch List') with Certificate of Substantial Completion have been corrected.
 - 3. Equipment and systems have been tested in presence of Owner's representative and are operational.
 - 4. Work is complete and ready for final inspection.
- B. Special Submittals: In addition to submittals required by Contract, submit following.
 - 1. Provide submittals required by governing authorities to governing authorities with copies included in Project Record Documents.

2. Submit final statement of accounting giving total adjusted Contract Sum, previous payments, and sum remaining due.

1.4 PROJECT RECORD DOCUMENTS

- A. Keep documents current; do not permanently conceal any work until required information has been recorded.
 1. Contractor to maintain a separate set of Drawings for Project Record Documents (Refer to Section 01 78 39).
 2. Store reproducible Drawings, one set of Project Manual, and one copy of each Change Order separate from documents used for construction, for use as Project Record Documents.
 3. Indicate actual work on Drawings; indicate actual products used in Project Manual, including manufacturer, model number and options.
 4. Update Project Record Documents daily and allow for Architect inspection at least once a month.
- B. At Contract close-out submit documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

1.5 MATERIAL AND FINISH DATA

- A. Provide data for primary materials and finishes.
- B. Submit two sets prior to final inspection, bound in 8-1/2" by 11" three-ring binders with durable plastic covers, clearly identified regarding extent of contents.
 1. Electronic Format: Where available in electronic format, submit electronic media with material and finish data.
- C. Arrange by Specification division and give names, addresses, and telephone numbers of subcontractors and suppliers. List:
 1. Trade names, model or type numbers.
 2. Cleaning instructions.
 3. Product data.

1.6 OPERATION AND MAINTENANCE DATA

- A. Provide data for:
 1. Electrical equipment and controls.
- B. Submit one set prior to final inspection. One (1) set shall be bound in 8-1/2" x 11" three-ring binders with durable plastic covers, clearly identified regarding extent of contents.
 1. Provide a separate volume for each system, with a table of contents and index tabs for each volume.
 2. Arrange by Specification division and gives names, addresses, and telephone numbers of subcontractors and suppliers. List:

- a. Appropriate design criteria.
 - b. List of equipment and parts lists.
 - c. Operating and maintenance instructions.
 - d. Shop drawings and product data.
- C. Electronic Format: Submit One (1) flash drive or thumb drive, contents shall match the requirements of the bound submittal and be clearly organized and labeled.

1.7 FINAL PAYMENT

- A. When, in the opinion of the architect, the project is complete (after all punch list items are complete as described in Item 1.2 Substantial Completion), the Architect will advise the owner and the owner will file the Notice of Completion with the County Recorder.
- B. Should there be items not available due to delays in delivery, or should work remain incomplete, the Architect and the School District may require the Contractor to post a certified check in an agreed upon amount sufficient to cover such incomplete or uncorrected items. Such certified check shall be held until completion of all incomplete Work.
- C. The retention outlined in Section 01 26 00 shall be held by the Owner until forty (40) days after the date of recording of the Notice of Completion by the County Recorder. If no stop notices or encumbrances are filed and if all work is complete, the retention shall be paid the contractor. Assessed liquidated damages and extra services provided by the architect and inspector due to additional inspections of incomplete work shall be deducted from the retention.
- D. Final payment to the contractor will not be made until all requirements have been met and all documents set forth herein have been received, including but not limited to: Record Drawings, Warranties, Operation and Maintenance Manuals, Demonstration/Training and extra stock.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not used

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Compile required and incidental warranties required by Contract Documents.
- B. These warranties shall be in addition to and not a limitation of other rights Owner may have against Contractor under Contract Documents and which may be prescribed by law, regardless of wording of warranty.

1.2 FORM OF SUBMITTAL

- A. Provide duplicate copies, notarized or on Contractor and Manufacturer's letterhead.
 - 1. Assemble documents executed by subcontractors, installers, suppliers, and manufacturers.
 - 2. Provide table of contents and assemble in binder with durable plastic cover, clearly identified regarding extent of contents.
 - 3. Electronic Format: Submit warranties on electronic media in PDF format.
- B. Warranty Form: Use form acceptable to Owner; completed form shall not detract from or confuse interpretations of Contract Documents.
 - 1. General Contractor shall sign warranty.
 - 2. Subcontractor and installer shall sign warranty where specified.
 - a. Provide required manufacturer's warranties for waterproofing and roofing systems countersigned by subcontractor and installer.
- C. Submit final warranties prior to final application for payment.
 - 1. For equipment put into use with Owner's permission during construction, submit within ten days after first operation.
 - 2. For items of Work delayed materially beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.
- D. Provide information for Owner's personnel regarding proper procedure in case of failure and instances that might affect validity of warranty.
- E. Size: 8-1/2" by 11" for three-ring binder; fold larger sheets to fit.

1.3 WARRANTIES

- A. Warranties are intended to protect Owner against failure of work and against deficient, defective and faulty materials and workmanship, regardless of sources.

- B. Limitations: Warranties are not intended to cover failures that result from:
 - 1. Unusual or abnormal phenomena of the elements.
 - 2. Owner's misuse, maltreatment or improper maintenance of work.
 - 3. Vandalism after substantial completion.
 - 4. Insurrection or acts of aggression including war.
- C. Related Damages and Losses: Remove and replace work which is damaged as result of failure, or which must be removed and replaced to provide access for correction of warranted work.
- D. Warranty Reinstatement: After correction of warranted work, reinstate warranty for corrected work to date of original warranty expiration, but not less than half original warranty period.
- E. Replacement Cost: Replace or restore failing warranted items without regard to anticipated useful service lives.
- F. Rejection of Warranties: Owner reserves right to reject unsolicited and coincidental product warranties that detract from or confuse interpretations of Contract Documents.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not used

END OF SECTION

**SECTION 01 78 36.10
WARRANTY FORM**

(SUBMIT IN DUPLICATE)

PROJECT Board of Supervisors Chambers Remodel

LOCATION _____

WARRANTY FOR _____

We hereby warrant that the _____

_____ work which we have installed in the above project for a period of

_____ year(s) in accordance with the warranty period required in the specifications.

We agree to repair or replace any or all such work, together with any other work which may be displaced in so doing that may prove defective in workmanship or materials, within the period of _____ year(s) from date of filing of the **Notice of Completion**, without expense whatsoever to the Owner, ordinary wear and tear and unusual abuse or neglect excepted.

In the event of our failure to comply with the above-mentioned conditions within fifteen (15) days after being notified in writing, we collectively or separately do hereby authorize said Owner to proceed to have the defects repaired and made good at our expense and will pay the costs and charges therefrom immediately upon demand. We also agree to pay all costs related to litigation if we do not pay the costs you demand.

DATE: _____

SUBCONTRACTOR'S SIGNATURE: _____

CONTRACTOR'S SIGNATURE: _____

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PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. See Section 01 77 00 Contract Closeout for Operation and Maintenance Manual requirements.
- C. See Divisions 02 through 49 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

- A. Submittal No. 01 78 39 A - Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit one set of marked-up Record Prints.
 - 2. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Initial Submittal: Submit one set of marked-up Record Prints. Architect will initial and date each plot and mark whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return plots and prints for organizing into sets, printing, binding, and final submittal.
 - b. Final Submittal: Submit one set of marked-up Record Prints, and the following:
- B. Submittal No. 01 78 39 B - Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
 - 1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

SECTION 01 78 39
PROJECT RECORD DOCUMENTS

- b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Record Transparencies: Organize into unbound sets matching Record Prints. Place transparencies in durable tube-type drawing containers with end caps. Mark end cap of each container with identification. If container does not include a complete set, identify Drawings included.
 3. Record CAD Drawings: Organize CAD information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each CAD file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of

**SECTION 01 78 39
PROJECT RECORD DOCUMENTS**

the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION

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PART 1 GENERAL

1.1 WORK INCLUDED

- A. Saw-cut and remove portions of existing concrete as designated.
- B. Remove designated building furnishings equipment and fixtures.
- C. Remove designated partitions, surface finishes and related components.
- D. Remove designated ceiling finishes and related components.
- E. Remove and cap and identify utilities.
- F. Remove existing plumbing fixtures where indicated
- G. Remove existing windows where indicated.
- H. Removal of existing asbestos bearing materials shall be performed by a licensed asbestos abatement contractor, and shall be under separate contract.
- I. Protect existing building from weather damage.
- J. Demolition of Hazardous Materials as identified below.

1.2 EXISTING CONDITIONS

- A. Conduct demolition to minimize interference with adjacent building areas. Maintain protected egress and access at all times.
- B. Provide, erect, and maintain temporary barriers and security devices.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 PREPARATION

- A. Erect and maintain weatherproof closures for exterior openings and roof decks.
- B. Erect and maintain temporary partitions to prevent spread of dust, fumes, noise, and smoke to provide for Owner occupancy of adjacent wings. See plan for area affected.
- C. Protect existing items which are not indicated to be altered.
- D. Disconnect, remove, and cap designated utility services within demolition areas.
- E. Mark location of disconnected utilities. Identify and indicate capping locations on Project Record Documents.

3.2 HAZARDOUS MATERIALS

- A. Regulatory Requirements
 - 1. The contractor and all subcontractors involved in this project shall have current knowledge of the United States Asbestos Hazard Emergency Response Act of 1987.
 - 2. The contractor and all subcontractors involved in this project shall have current knowledge of Title 8, California Code of Regulations, Section 1532.1 Construction Lead Standards.
- B. Reports: Notify architect or owner immediately upon encountering any asbestos construction materials.

3.3 EXECUTION

- A. Demolish in an orderly and careful manner. Protect existing supporting structural members, utility runs and landscaping. Assume existing components not specifically noted to be removed will remain. Protect to maintain original condition.
- B. Except where noted otherwise, immediately remove demolished materials from site.
- C. Remove materials to be re-installed or retained in manner to prevent damage. Store and protect under provisions of Section 01 60 00.
- D. Remove, store, and protect for re-installation materials and equipment hindering improvements.
- E. Remove material and equipment to be retained by Owner with care to avoid unnecessary damage.
- F. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.
- G. Report any encounter with asbestos bearing materials to the Architect or Owner immediately and stop work in the area.
- H. Do not burn or bury materials on site.
- I. Remove demolished materials from site as work progresses. Upon completion of work, leave areas of work in clean condition.
- J. Repair areas to remain that are damaged by the Demolition.

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. This Section includes the Plastic Fabrication as shown and specified in the described system(s):
 - 1. Translucent Resin Panel System.
- B. Related Sections:
 - 1. Section 06 20 00 Finish Carpentry
 - 2. Section 06 41 00 Custom Casework

1.2 SUBMITTALS

- A. All submittals shall be submitted under the provisions of Section 01 33 00 Submittal Procedures.
- B. Submittal No. 06 06 60 A – Shop Drawings:
 - 1. Submit shop drawings indicating thickness and dimensions of parts, fastenings and anchoring methods, and details.
- C. Submittal No. 06 06 60 B – Samples:
 - 1. Submit minimum 4-inch by 4-inch samples. Indicate full color, texture and pattern variation.
- D. Submittal No. 06 06 60 C - Product Data:
 - 1. Manufacturer's product data; include description, and fabrication information
- E. Closeout Submittal Item No. 06 06 60 D - Maintenance Data:
 - 1. Submit manufacturer's care and maintenance data, including care, repair and cleaning instructions. Include in Project closeout documents.
- F. Submit product test reports from a qualified independent 3rd party 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 test reports will be acceptable if for current manufacturer and indicative of products used on this project.
 - 1. Test reports required are:
 - a. Rate of Burning (ASTM D 635)
 - b. Self-Ignition Temperature (ASTM D 1929)
 - c. Density of Smoke (ASTM D 2843)
 - d. Flame Spread and Smoke Developed testing (ASTM E 84)
 - e. Room Corner Burn Test (NFPA 286)
 - f. Extent of Burning (UL 94)
 - g. Impact strength (ASTM D 3763)
 - h. Safety glazing impact resistance (ANSI Z97.1-2004)
 - i. UPITT Test for Combustion Product Toxicity
 - j. Passes NFPA 269/ASTM1678 for Combustion Product Toxicity
 - k. Dynamic environmental testing (ASTM standards D 5116 or D 6670)
 - l. UL Yellowcard

1.3 QUALITY ASSURANCE

- A. Manufacturers Qualifications:
 - 1. Materials and systems shall be manufactured by a company continuously and

regularly employed in the manufacture of specified materials for a period of at least five (5) consecutive years and which can show evidence of those materials being satisfactory used on at least six (6) projects of similar size, scope and location. At least three (3) of the projects shall have been successful for use five (5) years or longer.

2. Manufactured panels must be produced from a minimum of 40% post-industrial recycle content. This recycle content must be certified by a recognized 3rd party certification group, such as Scientific Certification Systems (SCS).
3. Completely PVC – Free products.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver Plastic Fabrications, systems and specified items in manufacturer's standard protective packaging.
- B. Plastic Fabrications, system, components, and accessories shall not be delivered to the Project site until areas are ready for installation.
- C. Store materials in a flat orientation in a dry place that is not exposed to exterior elements.
- D. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent damage or straining following installation for duration of project.
- E. Before installing Plastic Fabrications, permit them to reach room temperature.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install Solid Polymer Fabrications until spaces are enclosed and weatherproof, and ambient temperatures and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.6 WARRANTY

- A. Manufacturer's Special Warranty on Plastic Fabrications:
- B. Manufacturer's standard form agreeing to repair or replace units that fail in material or workmanship within the specified warranty period.
- C. Warranty Period: 1 year after the date of substantial completion.
- D. The warranty shall not deprive the owner of other rights or remedies the Owner may have under other provisions of the Contract Documents, and is in addition to and runs concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: 3form, Inc., Salt Lake City, Utah, USA, Ph: (801) 649-2500, www.3-form.com.

2.2 MATERIALS

**SECTION 06 06 60
PLASTIC FABRICATIONS**

- A. Basis of Design: Plastic Fabrications is based on products manufactured by 3form, Inc.
1. Meridian Profile Panels.
 2. Fire-Rated MDF.
 3. Sheet Size: Maximum 4' x 10'
 4. Thickness: As per manufacturer.
 5. Substitutions shall be submitted under the provisions per Section 01 62 00 Product Options.
- B. Interlayer Materials: Compatible with polyesters and bonding process to create a monolithic sheet of material when complete.
- C. Sheet minimum performance attributes:
1. Rate of Burning (ASTM D635). Material must attain CC1 Rating for a nominal thickness of 1.5 mm (0.060 in.) and greater.
 2. Self-Ignition Temperature (ASTM D1929). Material must have a Self-Ignition temperature greater than 650°F.
 3. Density of Smoke (ASTM D2843). Material must have a smoke density less than 75%.
 4. Flame spread and Smoke developed testing (ASTM E84). Material must be able to meet a level of Class A (Flame spread less than 25 and smoke less than 450) at thickness of 1".
 5. Room Corner Burn Test (NFPA 286). Material must meet Class A criteria at ¼" thickness as described by the 2012 International Building Code.
 6. Extent of Burning (UL 94). Must submit UL card.
 7. Impact strength. Minimum impact strength test as measured by ASTM D3763 of 20 ft. lbs. (for durability, shipping, installation, and use).
 8. Safety Glazing. Material must attain a Class A impact rating in accordance with ANSI Z97.1-2004 at 1/8th thickness.
 9. UPITT Test for Combustion Product Toxicity: Product must be recorded as "not more toxic than wood".
 10. Dynamic environmental testing (ASTM standards D5116 and D6670). Panels must not have detectable VOC off-gassing agents and must be Greenguard™ Indoor Air Quality certified.
 11. Panels must be produced from a minimum of 40% post-industrial recycle content. This recycle content must be certified by a recognized 3rd party certification group, such as Scientific Certification Systems (SCS).
 - a. Building Approvals: Plastic Fabrications are to have been evaluated and must be registered with and comply to requirements of the following jurisdictions:
 - 1) New York Department of Buildings (Product must have an MEA [Materials and Equipment Acceptance] number) for use as Interior Finishes
 - 2) Los Angeles Department of Building and Safety (Product must have a LARR [Los Angeles Research Report] number) for use as Light-transmitting Panels

2.3 FABRICATION

- A. General: Fabricate Plastic Fabrications to designs, sizes and thicknesses indicated and to comply with indicated standard. Sizes, profiles and other characteristics are indicated on the drawings.
- B. Comply with manufacturer's written recommendations for fabrication.
- C. Machining: Acceptable means of machining are listed below. Ensure that material is not chipped or warped by machining operations.
1. Sawing: Select equipment and blades suitable for type of cut required.
 2. Drilling: Drills specifically designed for use with plastic products.
 3. Milling: Climb cut where possible.

4. Routing
 5. Tapping
- D. Forming: Form products to shapes indicated using the appropriate method listed below. Comply with manufacturer's written instructions.
1. Cold Bending
 2. Hot Bending
 3. Thermoforming: Acceptable only on uncoated material.
 4. Drape Forming
 5. Matched Mold Forming
 6. Mechanical Forming
- E. Laminating: Laminate to substrates indicated using adhesives and techniques recommended by manufacturer.

2.4 MISCELLANEOUS MATERIALS

- A. General: Provide products of material, size and shape required for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaner: Type recommended by manufacturer.
- C. Fasteners: Use screws designed specifically for plastics. Self-threading screws are acceptable for permanent installations. Provide threaded metal inserts for applications requiring frequent disassembly such as light fixtures.
- D. Bonding Cements: May be achieved with solvents or adhesives, suitable for use with product and application.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where installation of Plastic Fabrications will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for installation and comply with requirements specified.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written instructions for the installation of Plastic Fabrications.
- B. Manufacturer's shop to fabricate items to the greatest degree possible.
- C. Utilize fasteners, adhesives and bonding agents recommended by manufacturer for type of installation indicated. Material that is chipped, warped, hazed or discolored as a result of installation or fabrication methods will be rejected.
- D. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.
- E. Form field joints using manufacturer's recommended procedures. Locate seams in panels so that they are not directly in line with seams in substrates.

3.3 CLEANING AND PROTECTION

- A. Protect surfaces from damage until date of substantial completion. Repair work or replace damaged work, which cannot be repaired to Architect's satisfaction.

END OF SECTION

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PART 1 GENERAL**1.1 SUMMARY**

A. This section includes:

1. Structural and non-structural framing and sheathing.
2. Miscellaneous concealed and exterior lumber and sheet materials as shown or required.
3. Roof curbs and cants.
4. Blocking in wall and roof openings.
5. Concealed wood blocking for support of washroom accessories and wall cabinets.
6. Wood Blocking.
7. Treatment of wood members where required.

B. References:

1. The publications listed below form a part of this Section to the extent referenced. The publications are referred to in the text by the basic designation only. Refer to Division 01 for definitions, acronyms, and abbreviations.
2. Standards, manuals, and codes refer to the latest edition of such standards, manuals, and codes in effect as of the date of issue of this Project Manual, unless indicated otherwise in CBC Chapter 35 and CFC Chapter 80.
3. American Wood Council (AWC):
 - a. National Design Specification for Wood Construction.
4. West Coast Lumber Inspection Bureau (WCLIB):
 - a. Standard Grading Rules for West Coast Lumber.
5. Western Wood Products Association (WWPA):
 - a. Western Lumber Grading Rules 2017.
6. American Wood Preservers Association (AWPA):
 - a. 2020 AWPA Book of Standards.
 - b. U1-20 User specification for Treated Wood.
7. American Wood Preservers Bureau (AWPB):
 - a. Quality Control Standards.
8. Redwood Inspection Service (RIS):
 - a. Standard Specifications for Grades of California Redwood Lumber.
9. American Society of Testing Materials (ASTM):
 - a. ASTM A36 / A36M - 19 Standard Specification for Carbon Structural Steel.
 - b. ASTM A307 - 14e1 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 PSI Tensile Strength.
 - c. ASTM A653 / A653M - 20 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - d. ASTM E84 - 20 Standard Test Method for Surface Burning Characteristics of Building Materials.
10. Federal Specifications (FS):
 - a. FS TT-W-571 - Wood Preservation: Treating Practices.
 - b. FS FF-N-105B – Common Wire Nails.
11. California Building Code Title 24, Chapter 23.
12. American Forest and Paper Association (AF and PA).

1.2 QUALITY ASSURANCE

A. All pieces of lumber to have visible grade stamp of an agency certified by AF and PA.

1. Grade and quality marks shall not be apparent on surfaces exposed in the finished work.

- B. Provide written certification stating that materials provided meet specified requirements, including but not limited to their compliance with referenced standards relative to:
 1. Grade mark for the use intended
 2. Preservative treatment
 3. Fire retardant treatment

1.3 DELIVERY, STORAGE AND HANDLING

- A. Protect materials from weather while in transit. Place under cover and protect from weather immediately upon delivery.
- B. Store flat, off the floor, in well ventilated area where there will be no great variations in heat and humidity.

1.4 WARRANTY

- A. Warrant the Work specified herein for two (2) years against becoming unserviceable or causing an objectionable appearance resulting from defects in materials and workmanship.
- B. Warrant that products comply with the Contract Documents and local use restrictions, and are compatible with adjoining materials, substrates and other conditions of installation.
- C. Defects shall include, but not be limited to:
 1. Buckling or warping of surfaces
 2. Loose or missing parts
 3. Faulty installation, attachment or alignment
 4. Deterioration due to lack or loss of preservative treatment

PART 2 PRODUCTS

2.1 LUMBER

- A. Provide locally sourced materials when possible.
- B. Lumber: PS 20, graded in accordance with NDS Grading Rules; Rule No. 17 of the West Coast Lumber Inspection Bureau:
 1. Moisture content of 19% maximum for 2x thickness and less; 19% maximum for thickness greater than 2x and less than 4x; and 22% maximum for thickness greater than 4x.
 2. Non-Structural Light Framing: #1.
 3. Structural Framing: see structural drawings.
 4. Sill Plates (On Concrete): Construction Grade Light Framing, pressure treated as hereinafter specified; as noted on plans.
 5. Surfaced to "DRY" sizes. Sizes noted are nominal unless shown as net.
- C. All wood materials exposed in the finished work shall have resawn surfaces of clean natural color unless noted or specified otherwise. Concealed framing lumber shall be S4S.
- D. End jointed lumber shall not be used. All structural wood members with the

least dimension 2 1/2" or greater shall be free of heart center. All sides surfaced.

- E. Preservative Treated Wood Materials: Pressure-treated in accordance with Standard Specifications of AWPA for treating structural timbers and FS TT-W-571.

2.2 ACCESSORIES

- A. Furnish and install all connecting hardware indicated on Drawings, specified herein or required to complete the work.

B. Materials:

1. Nails, Screws, Bolts and Fasteners: Hot-dipped galvanized steel for exterior, high humidity, and treated wood locations; plain finish elsewhere; size and type to suit condition.
2. Nails for light gauge metal connectors: Common wire nails, sizes as indicated or as specified by metal connector manufacturer
3. Screws: Standard domestic manufacturer, bright steel. Galvanized for exterior use. Brass, bronze, aluminum or stainless when used to fasten items made of those metals.
4. Screws: For attaching interior trim and finish to drywall partitions, use Type S, self-drilling, self-tapping anodized steel drywall screws of indicated lengths
5. Bolts: ASTM A307 Grade A machine bolts with standard hex nuts and steel plate or cut washers or carriage bolts with standard hex nuts and cut washers as indicated. Bolts, nuts and washers wholly or partially exposed on exterior shall be galvanized. Sill plate anchor bolts shall use 3 inch by 3 inch by 1/4 inch Plate Washers.
6. Steel Plates and Angles: In accordance with ASTM A36.
7. Lag Screws, Shear Plates, and Split Ring Connectors: As per American Forest & Paper Association "National Design Specifications for Wood construction".
8. Lag Bolts: Fed. Spec. FF-B 561. Pre-drill per CBC.
9. Framing Anchors, Joist Hangers, Etc.: As made by Simpson Company and indicated on drawings, or equivalent devices as approved by Architect. All framing connectors and joist hangers in contact with preservative-treated wood shall be coated to meet the requirements of CBC Section 2304.9.5.1. Connectors in contact with preservative-treated wood should have a minimum coating meeting the connector manufacturer's recommendations based upon the type of preservative treatment used. At outdoor installations, in the absence of manufacturer's recommendations, the connectors in contact with preservative-treated wood shall have a minimum coating meeting ASTM A653, type G185 per the CBC.
10. Power Driven Inserts: Hilti, Ramset, or as approved by Architect; install as per manufacturer's directions.
11. Miscellaneous Clips, Steel Assemblies: As per ASTM A36.
12. Provide drilled anchors (i.e., Hilti Kwik Bolt TZ) as indicated on plan in concrete. Pull test as indicated on per table in General Structural Notes of construction drawing set.

C. Pressure Treatment (Decay and Termite Prevention):

1. Pressure treat for decay and termite prevention, Douglas fir or larch wood materials which are embedded in or set against concrete.
2. Treat in accordance with Reference Standard 1.02 E and quality mark as per Reference Standard 1.02 F.
3. Treat with any of the following processes at Contractor option. Creosote type preservatives are not permitted:
4. Penta in an LPG carrier ("Cellon") or Penta in Hydrocarbon Solvent-Type D (Dow Process) AWPB LP-4 quality marked).

5. Ammoniacal copper arsenate (ACA) or chromated copper arsenate (CCA) in a water carrier (AWPB LP-2 quality marked).
6. Disodium Octaborate Tetrahydrate (DOT) such as Advance Guard/Hi-bor by Osmose, Inc.
7. Members treated with waterborne salts shall be dried to a moisture content not exceeding 19% after treatment.
8. Where possible, precut material before treatment.
9. Holes and cutoffs and handling and storage shall be in accordance with AWPA M-4.
10. Ensure that ferrous metal fastenings and items in contact with wood treated with waterborne salts are hot dip galvanized (1.25 oz. coating) where required by ICC reports.
 - D. Building Paper and Felt: Two (2) layers Kraft waterproof building paper or 15# unperforated asphalt saturated rag felt per CBC Standard 14-1.
 - E. Framing connectors: Simpson Strong Tie Corp., or Architect approved substitute.

PART 3 EXECUTION

3.1 SITE TREATMENT

- A. Field apply a compatible preservative or fire-retardant treatment, as applicable, to site-sawn ends of treated members in accordance with manufacturer's recommendations. Allow treatment to cure prior to placing members.
- B. Locations requiring preservative treatment:
 1. Sill Plates for wood framing in contact with concrete or masonry.
 2. Blocking or grounds in contact with concrete or masonry.
 3. Blocking or grounds concealed in construction in such a manner as to prevent exposure to circulating air.
- C. Locations requiring fire retardant treatment:
 1. Concealed backing and blocking within partition or ceiling construction.
 2. Other interior locations as shown or required by code.

3.2 SELECTION AND USE OF LUMBER

- A. Examine each piece of lumber separately. Select for strength, warp and appearance, using the best pieces for the most demanding purposes.
- B. Discard inferior portions of members where shorter pieces are required.

3.3 INSTALLATION

- A. Execute carpentry Work carefully with neat cuts and close joints. Fit members to give firm seating and bearing.
- B. Place members true to lines and levels. Secure rigidly in place.
- C. Construct continuous members with pieces of longest possible lengths.
- D. Install members where indicated or needed to provide proper nailing, furring or

- bracing. Provide all blocking as required to hold Work in proper position.
- E. Bore bolt holes only slightly larger than size of bolts. Provide washers for all bolts where heads or nuts bear on wood. Where required, countersink heads, nuts and washers.
 - F. Plywood Sheathing: Install plywood roof sheathing and sub flooring with long dimension perpendicular to joints.
 - G. Fire Blocking: Provide in accordance with CBC Section 708.

3.4 FRAMING

- A. General: Install all wood framing making proper provisions for work of other trades. Do all cutting of wood required to accommodate plumbing, heating and ventilating, electrical and other trades. Fit neatly around all exposed items such as outlet boxes, conduit, pipes and ducts.
- B. Exterior Base Plates or Bearing or Sheathed Wall Sills Resting on Concrete: Bed in cement mortar to obtain a continuous bearing. Mortar shall consist of one part cement to three parts sand. Mix mortar in small quantities so it can be used promptly. Size all plates or sills and set level true to line. Bolt down with bolts of size, length and spacing indicated, with a bolt not more than nine inches from the end of any piece. Each piece shall receive at least two bolts.
- C. Rough Framing: Fit closely; set accurately to required lines and levels and secure rigidly in place. Set horizontal and inclined members with crown edge up. Do not cut, notch, or bore structural members without specific approval. Reinforce cut members as directed. Bolt, nail and spike thoroughly with not less than sizes and quantities indicated. Structural members shall provide full contact at all bearing surfaces. Joists shall be spliced over bearings unless shown otherwise.
- D. Studs: Construct walls and partitions of nominal 2 by 4, 2 by 6, 4 by 6, 2 by 8, or 4 by 8 studs, 16 inches on center, unless otherwise indicated or required to be larger to accommodate mechanical or electrical equipment, piping, and fixtures or the fixtures or equipment of any other trade. Unless otherwise indicated, all panels, valve covers, cleanouts, devices, access doors, recessed cabinet boxes, etc. shall be mounted flush with the adjacent wall surface. When any such item is of a depth where it is not practical to use solid studding to the full thickness of the wall, the wall shall be furred. When furring is required, it shall extend the full width of the room on the wall in which it occurs and from floor to roof or ceiling joists. The studs comprising all interior partitions and the wall material affixed to them shall extend from floor to ceiling joist framing except as otherwise indicated. Staggered stud walls shall be constructed where indicated on drawings.
- E. Top Plates in Bearing Partitions: Shall be doubled and lapped at each intersection with walls or partitions. Stagger joints in upper and lower members of top plate not less than 4 feet and splice as shown.
- F. Provide blocking not less than 2 inches in thickness (nominal) of same width as studs as shown on drawings. Also install all fire stopping as required by Section 708 of the California Building Code.

- G. Frame corners solid where stud walls or partitions meet, or as indicated on drawings.
- H. Connections and Fastenings: Conform to CBC. Unless otherwise specified or shown on the Drawings, conform to minimum nailing requirements of CBC. For bolted connections, provide washers under heads and nuts bearing on wood, and draw nuts tight. Retighten before closing in framing. Exercise care in nailing through exposed sheathing and siding and ensure that fasteners penetrate into framing members

3.5 WOOD BACKING AND NAILING STRIPS

- A. Provide all wood backing, furring or blocking indicated or required for proper installation and attachment or work of other trades.
1. Form lumber, which has been cleaned and is in sound conditions, may be used, unless other material is indicated.
 - B. Provide wood stripping where indicated for attachment of finish materials to wood or concrete surfaces

3.6 TOLERANCES

- A. Framing Members: 1/4 inch maximum from true position.
- B. Surface Flatness of Floor: 1/4 inch in 10 feet maximum.

3.7 CLEANUP

- A. Upon completion of installation activity, remove all waste, sawdust, dirt, wrappings and excess materials, tools and equipment. Thoroughly clean all surfaces to the satisfaction of the Architect.

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Finish carpentry items, other than shop-prefabricated casework, with accessories as required for complete installation.
 - 1. Window trims, sills and other wood trims.
 - 2. Exterior fascias and trims

1.2 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

- A. Submittal No. 06 20 00A - Product Data: Submit literature for manufactured items.
- B. Submittal No. 06 20 00B - Shop Drawings: Indicate materials and wood species, component profiles, fastening, joining details, finishes, and accessories to a minimum scale of 1-1/2 inch to one foot.
- C. Submittal No. 06 20 00C - Samples: Furnish samples of each type of finish carpentry, 12" long min.

1.3 QUALITY ASSURANCE

- A. Standards: Perform finish carpentry in accordance with standards of Woodwork Institute (formerly Woodwork Institute of California) "Manual of Millwork."

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver materials until site conditions are adequate to receive work; protect items from weather while in transit.
- B. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and maximum relative humidity of 25% to 55%.
- C. Do not begin installation of finish carpentry until space is fully enclosed and mechanical systems are fully operational.
- D. Maintain interior installation areas at 70 degrees F and 50% to 55% relative humidity.
- E. Immediately remove from site materials with visible mold and materials with mildew.

PART 2 PRODUCTS**2.1 MATERIALS, GENERAL**

- A. Lumber: DOC PS 20 and applicable grading rules of inspection agencies certified by ALSC's Board of Review.
- B. Softwood Plywood: DOC PS 1.

- C. Hardboard: AHA A135.4.
- D. MDF: ANSI A208.2, Grade 130, made with binder containing no urea-formaldehyde resin.
- E. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea-formaldehyde resin.
- F. Melamine-Faced Particleboard: Particleboard complying with ANSI A208.1, Grade M-2, finished on both faces with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
- G. Lumber for Shimming, Blocking, and Backing: No. 2 Douglas Fir.
- H. Anchors, Nails and Screws: Select the material, type, size and finish required by each substrate for secure anchorage; provide toothed steel or lead expansion bolt screws for drilled-in-place anchors.
- I. Wood Filler: Color to match wood being filled.

2.2 FABRICATION

- A. Fabricate finish carpentry items to Woodwork Institute Premium standards.
- B. Use exposed fastening devices or nails only when approved in writing by Architect and unavoidable; arrange neatly.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible; do not delay job progress, allow for trimming and fitting.
- B. Verify surfaces are ready to receive work and field measurements are as shown on shop drawings.
 - 1. Beginning installation signifies acceptance of conditions.
- C. Ensure mechanical and electrical items affecting work are properly placed, complete, and have been inspected by applicable authorities prior to commencement of installation.
- D. Inspect each piece of finish carpentry and discard damaged and defective pieces.

3.2 INSTALLATION

- A. Install work consistent with specified WI MoM quality grade, plumb, level, true and straight with no distortions; shim as required, using concealed shims.
 - 1. Prime paint surfaces in contact with cementitious materials prior to installation; comply with requirements of Section 09 90 00 – Painting and Coating.
- B. Secure work to blocking with countersunk, concealed fasteners and blind

nailing as required for a complete installation.

- C. Scribe and cut for accurate fit to other finished work.
- D. Install trim in single, unjointed lengths for openings and for runs less than 10'-0".
 - 1. For longer runs, use only one piece less than 10'-0" in any straight run; provide scarf joints between members.
 - 2. Stagger joints in adjacent members.
 - 3. Cope at returns and miter at corners.
- E. Accessories: Install accessories in accordance with manufacturer's recommendations in locations indicated or as directed by Architect.
- F. Acceptable Tolerances:
 - 1. Variation from True Position: Maximum 1/16" at any position and maximum 1/8" in any 10'-0" length.
 - 2. Adjoining Surfaces of Same Material: No variation permitted.
 - 3. Offset with Abutting Materials: Maximum 1/32".
- G. Preparation for Field Finishing:
 - 1. Sand work smooth and set exposed nails and screws.
 - 2. Apply wood filler in exposed nail and screw indentations and leave ready to receive site-applied finishes.
 - 3. Seal concealed and semi-concealed surfaces; brush apply only, using primer consistent with finish coats specified under Section 09 90 00 – Painting and Coating.

END OF SECTION

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PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide mill fabricated architectural woodwork with accessories as required for complete finished installation including cabinetwork hardware.
 - 1. Provide cabinetwork.
 - 2. Provide plastic laminate countertops.

1.2 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

- A. Submittal No. 06 40 00A - Product Data: Submit literature for manufactured items.
- B. Submittal No. 06 40 00B - Product Shop Drawings:
 - 1. Include materials, dimensioned plans, elevations, and sections, fastening methods, assembly methods, joint details, accessory listings, and schedule of finishes. Provide elevations at 3/8" scale minimum and indicate plan views of all countertops. Include depths of all casework in submittal.
- C. Submittal No. 06 40 00C - Samples: Furnish samples of each exposed architectural woodwork finish on each type of specified wood, and including each exposed cabinet and display case hardware.

1.3 QUALITY ASSURANCE

- A. Fabricator Qualifications: Member of Woodwork Institute (formerly Woodwork Institute of California) with minimum five years successful experience fabricating architectural woodwork similar to that required for Project.
- B. Standards: Perform architectural woodwork in accordance with recommendations Woodwork Institute (formerly Woodwork Institute of California) "Manual of Millwork" (WI MoM).
- C. Field Sample: Provide one full size field sample of residential unit base and wall cabinet and countertop, including drawer, doors and shelves.
- D. Seismic Anchorage: Provide seismic anchorage for wall and base cabinets as required by California Code of Regulations (CCR), Title 24, Part 2.

1.4 DELIVERY, STORAGE, AND HANDLING

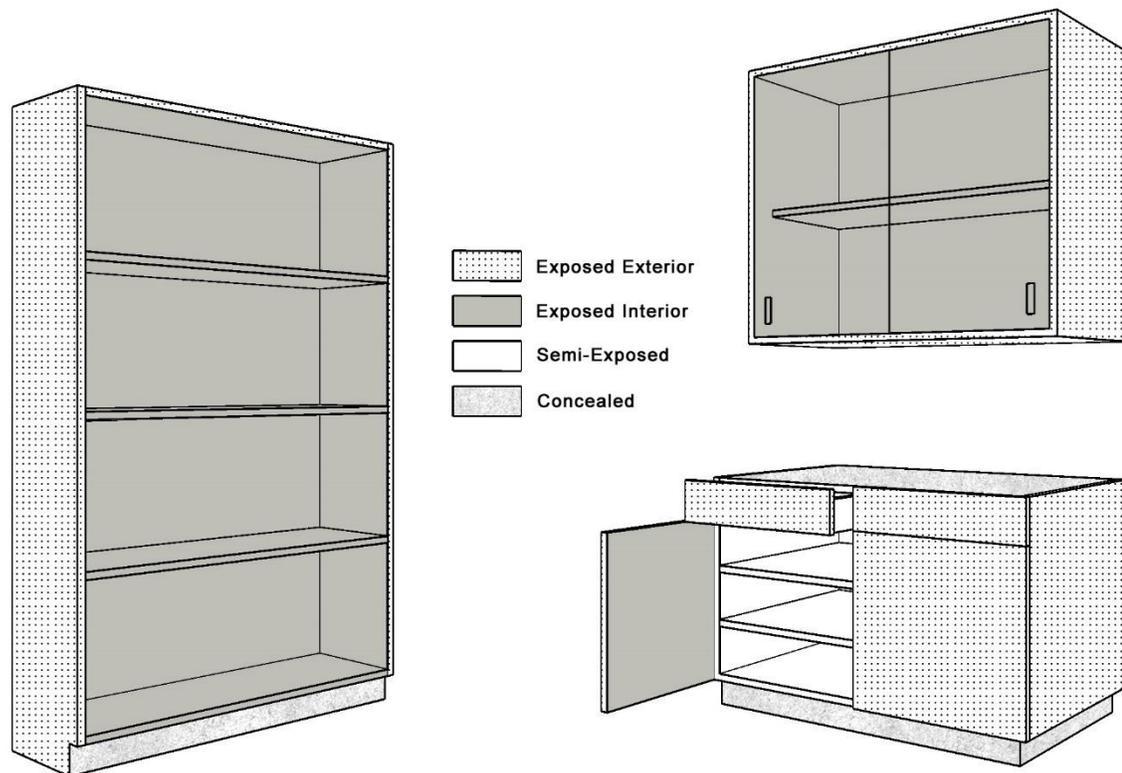
- A. Do not deliver architectural woodwork until site conditions are adequate to receive work; protect items from weather while in transit.
 - 1. Allow architectural woodwork shop finish to completely dry prior to delivery to site; allow materials to off-gas volatile organic compound (VOC) emissions off site.
- B. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and maximum relative humidity of 25% to 55%.

**SECTION 06 41 00
CUSTOM CASEWORK**

- C. Do not begin installation of finish carpentry until space is fully enclosed and mechanical systems are fully operational.
- 1. Maintain interior installation areas at 70 degrees F and 50% to 55% relative humidity.
- D. Immediately remove from site materials with visible mold and materials with mildew.

1.5 SURFACE DEFINITIONS

- A. Surface Definitions shall be in accordance with those of the Architectural Woodwork Standards (1st Edition, October 2009) as depicted in the graphic below.
- B. Material for the Exposed Exterior and Exposed Interior surfaces shall be high-pressure thermoplastic laminate. White melamine will not be allowed. Melamine may be used at Semi-Exposed surfaces.



PART 2 PRODUCTS

2.1 MATERIALS

- A. Transparent/Stained Finished Casework:
 - 1. Quality: WI MoM/Custom Grade, Type II, Style A, flush overlay type.
 - 2. Veneer: Clear Hard White Maple unless otherwise indicated; veneers as

- approved by Architect; a uniform appearance shall be required.
- a. Veneer Thickness: Minimum 0.036" thick.
 - b. Inside Surfaces: White Birch stained to match exterior veneers; melamine interiors is not acceptable.
 3. Particleboard Core: Provide Medite Corp. (Sierraoine) Medite II or Rodman Industries/Resincore I formaldehyde-free medium density fiberboard (MDF) or particleboard made from recycled wood products.
 4. Exposed Edges: Hardwood matching veneer.
- B. Plastic Laminate Finished Casework and Countertops:
1. Quality: WI MoM/Custom Grade, Type I, Style A, frameless, multiple unit construction.
 2. Plastic Laminates:
 - c. Types: NEMA LD-3.1 high pressure laminates.
 - 1) Horizontal Surfaces: General Purpose Type, nominal 0.045".
 - 2) Vertical Surfaces: Vertical Surface Type, nominal 0.032".
 - 3) Unexposed Surfaces: Balanced with 0.030" melamine backing sheet.
 - 4) Formed Surfaces: Postforming Type, nominal 0.042".
 - d. Manufacturers:
 - 1) Formica
 - 2) Nevamar
 - 3) Wilsonart
 - 4) Pionite
 - 5) Substitutions: Refer to Section 01 62 00.
 - e. Colors: As selected by Architect from manufacturer's full range of available colors and patterns, including premium line, and excluding metallics.
 3. Particleboard Core: Provide Medite Corp. (Sierrapine)Medite II or Rodman Industries/Resincore I formaldehyde-free medium density fiberboard (MDF) or particleboard made from recycled wood products.
 4. Provide 1 1/8" thick plastic laminate covered plywood shelving at all open casework units and at all locations where shelving span exceeds 36" (thirty-six inches)
 5. Particleboard Core: Provide Medite Corp. (Sierrapine)Medite II or Rodman Industries/Resincore I formaldehyde-free medium density fiberboard (MDF) or particleboard made from recycled wood products.
 6. Edgebanding: Provide Doelken-Woodtape, Stock Program including SpecLine, Woodgrain Selector, and KwikEdge.
- C. Casework Hardware: Provide casework hardware items as required for complete installation as indicated; provide types as listed in WI MoM "Manual" but no less than following types. Plug-In Pin Type Shelf Supports (Transparent Finished Casework): Provide holes 1" on center.
1. Adjustable Shelf Standards and Supports (Contractor Option at Plastic Laminate Casework): Flush mounted in cabinet.
- a. Manufacturers:
- 1) Futura/No. AS 662 with AS 563/663 support.
 - 2) Knappe & Vogt/No. 255 with No. 256 support.
 - 3) Substitutions: Refer to Section 01 62 00.
2. Cabinet Hinges: European concealed type, minimum 160 degree opening, with spring closer.
3. Cabinet and Drawer Pulls: Wire type, 4" center to center, satin chrome finish.
- a. Manufacturers:
- 1) Baldwin Hardware Manuf. Corp./No. 4672.
 - 2) Stanley Hardware/No. 4484.
 - 3) The Engineered Products Co./No. MC-4023.

- 4) Substitutions: Refer to Section 01 62 00.
4. Drawer Slides: Full extension, rail mounted type, minimum 100 lb. capacity with ball-bearing rollers.
- a. Manufacturers:
 - 1) Accuride.
 - 2) Knape & Vogt.
 - 3) Substitutions: Refer to Section 01 62 00.
 5. Cabinet Locks: Pin and tumbler slide bolt lock, two keys each.
- a. Manufacturers:
 - 1) Schlage Lock Co./46-002 Cabinet Locks.
 - 2) Best Access Systems/5L Series.
 - 3) CompX International/Timberline Locks.
 - 4) Substitutions: Refer to Section 01 62 00.
- D. Anchors and Screws: Fasten cabinets to walls with #14 round washer head screws with embedment depth indicated in Drawings; use self-drilling screws at attachment to metal framing; use Simpson Titan HD for drilled-in-place anchors unless otherwise indicated in Drawings.
- E. Wood Filler: Color to match wood being filled.

2.2 FABRICATION

- A. General: Fabricate architectural woodwork in accordance with specified quality standards.
- B. Plastic Laminate:
 1. Apply plastic laminate finish in full, uninterrupted sheets consistent with manufactured sizes.
 2. Make corners and joints hairline; slightly bevel arises.
 3. Locate butt joints at least 2'-0" from cutouts.
 4. Cap exposed edges with plastic laminate of same finish and pattern.
 5. Apply laminate backing sheet to reverse side of laminate surfaces.
 6. Provide cutouts for inserts, fixtures and fittings; verify locations from on-site dimensions.
 7. Prime paint contact surfaces of cutouts.
 8. Plastic Laminate Countertops: Square butt joints and self edging; applied plastic or metal edging not permitted.
- C. Countertops: Provide maximum sizes available. Locate butt joints at least 2'-0" from cutouts where more than one piece countertops are required.
 1. Make corners and joints hairline; slightly bevel arises.
 2. Provide cutouts for inserts, fixtures and fittings; verify locations from on-site dimensions.
- D. Use exposed fastening devices or nails only when approved and unavoidable; arrange neatly.
- E. Assemble woodwork in shop in sizes easily handled and to ensure passage through building openings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible; do not delay job progress, allow for trimming and fitting.

3.2 INSTALLATION

- A. Install work consistent with specified quality grade, plumb, level, true and straight with no distortions.
 - 1. Shim as required, using concealed shims.
- B. Ensure mechanical and electrical items affecting architectural woodwork are properly placed, complete, and have been inspected by Architect prior to commencement of installation.
- C. Secure work to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation.
- D. Scribe and cut for accurate fit to other finished work.
- E. Install architectural woodwork under supervision of factory-trained mechanics.
- F. Attach architectural woodwork securely in place with uniform joints providing for thermal and building movements.
- G. Acceptable Tolerances:
 - 1. Variation from True Position: Maximum 1/16" at any position and maximum 1/8" in any 10'-0" length.
 - 2. Adjoining Surfaces of Same Material: No variation permitted.
 - 3. Offset with Abutting Materials: Maximum 1/32".

END OF SECTION

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PART 1 GENERAL**1.1 SUMMARY**

A. Section Includes:

1. Provide thermal insulation system at acoustic batt insulation at interior walls with accessories as required for complete installation.

1.2 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

A. Submittal No. 07 21 00A - Product Data: Furnish manufacturer's literature for each type of insulation.

1. Indicate thermal insulation name and number as included in California Energy Commission's Directory of Certified Material.
2. Submit Underwriter's Laboratory approval numbers for required fire ratings; approvals of other laboratories contingent upon acceptance of applicable authorities.
3. Installation Instructions: Submit manufacturer's installation instructions.

PART 2 PRODUCTS**2.1 MATERIALS**

A. Acceptable Manufacturers:

1. Knauf Insulation
2. Johns Manville/FSK-25 Thermal-Shield Insulation.
3. Owens-Corning Fiberglas Corp./Fiberglas FS-25 Insulation.
4. Certainteed.
5. Substitutions: Refer to Section 01 62 00.

B. Materials

1. Acoustic Batt Insulation at Interior Walls: R-13 unfaced.
2. Insulation Supports: Galvanized or electroplated steel wire supports with friction attachment to framing.
3. Nails or staples: Steel wire; electroplated; type and size to suit application.
4. Line Wire: Galvanized steel, 19 gauge wire.
5. Wire Mesh: 1 1/2" x 17 gauge poultry netting.
6. Vapor Retarder: Type III, aluminum vapor retarder on one side.
7. Vapor Retarder Tape: Minimum 2" wide self-adhering type designed to maintain vapor retarder integrity and complying with fire resistance ratings as required by applicable codes.
8. Accessories: Furnish as recommended by insulation manufacturer for insulation types, substrates, and conditions involved.
9. Insulation shall comply with California standards for insulating material.
- a. Flame Spread/Smoke Density Rating: Maximum 25/450, ASTM E84.

PART 3 EXECUTION**3.1 EXAMINATION**

**SECTION 07 21 00
BATT INSULATION SYSTEMS**

- A. Verify substrate and adjacent materials are dry and ready to receive insulation; beginning installation signifies acceptance of conditions.
- B. Ensure mechanical and electrical items affecting work are properly placed, complete, and have been inspected prior to commencement of installation.

3.2 INSTALLATION

- A. Install insulation in accordance with manufacturer's instructions.
- B. Cut and trim insulation neatly, to fit spaces.
 - 1. Backed Insulation: Use insulation free of ripped backs and edges.
- C. Fit insulation tight within spaces and tight to and behind mechanical and electrical services within insulation plane; leave no gaps or voids; maintain integrity of thermal barrier.
- D. Maintain minimum ventilating airspace as required by the Drawings.
- E. Friction fit in place; use tape or friction supports as necessary to assure permanent installation.
 - 1. Taping: Tape joints and tears in vapor retarder, including joints between insulation and surrounding construction, to ensure vapor-tight installation.
 - 2. Penetration Supports: Cut or bend pins in locations accessible to maintenance personnel, to eliminate potential hazards from exposed pin points.

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide galvanized steel flashing and sheet metal including accessories for a complete weather tight installation, including the following.
 - 1. Formed sheet metal flashings and fabrications, including the following:
 - a. Parapet coping and wall cap flashings.
 - b. Wall flashings.
 - c. Roof penetration flashings.
 - d. Roof termination flashings and counterflashings.
 - e. Edge termination flashings.
 - f. Head and sill flashings.
 - g. Miscellaneous building sheet metal flashings.
 - h. Gutters.
 - i. Scuppers.
 - j. Miscellaneous sheet metal fabrications.
 - 2. Manufactured reglets with removable counterflashings.
 - 3. Sealants associated with shop fabrication of sheet metal work.

- B. Related Sections
 - 1. Section 05 50 00 "Metal Fabrications" for steel pipe downspouts.
 - 2. Section 07 41 13 "Metal Roof System" for metal roof panels, and related fascia panels, closures, trim, and flashings included as part of metal roof system.
 - 3. Section 07 54 19 "PVC Membrane Roofing" for flexible sheet flashing installed in conjunction with sheet metal flashings.
 - 4. Section 07 92 00 "Joint Protection" for field-applied building sealants installed in conjunction with sheet metal work.
 - 5. Section 09 90 00 "Painting" for field painting of non-factory-finished sheet metal items exposed to view.

1.2 REFERENCES

- A. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Architectural Sheet Metal Manual, Fifth Edition.
- B. ANSI/ASTM B32 - Solder Metal.
- C. ASTM A525 - Steel Sheet, Zinc Coated, Galvanized by the Hot-Dip Process.
- D. FS O-F-506 - Flux, Soldering, Paste and Liquid.
- E. FS QQ-S-571 - Solder, Tin Alloy.
- F. FS SS-C-153 - Cement, Bituminous, Plastic.
- G. NAAMM - Metal Finishes Handbook.
- H. NRCA (National Roofing Contractors Association) - Roofing Manual.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads,

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structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

- B. Fabricate and install roof edge flashing and copings capable of resisting the following forces according to recommendations in FMG Loss Prevention Data Sheet 1-49:
 - 1. Wind Zone 1: For velocity pressures of 21 to 30 lbf/sq. ft: 60 lbf/sq. ft. perimeter uplift force, 90 lbf/sq. ft. corner uplift force, and 30 lbf/sq. ft. outward force.
- C. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg. F, ambient; 180 deg F, material surfaces.
- D. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.4 QUALITY ASSURANCE

- A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual". Conform to dimensions and profiles shown unless more stringent requirements are indicated.
- B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section for project management and coordination.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, installer and installer's whose work interfaces with or affects sheet metal flashing and trim including installers of roofing materials, roof accessories, unit skylights, and roof-mounted equipment.
 - 2. Review methods and procedures related to sheet metal flashing and trim.
 - 3. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
 - 4. Document proceedings, including corrective measures and action required, and furnish copy of record to each participant.

1.5 SUBMITTALS

All submittals shall be made under the provisions of Section 01 33 00.

- A. Submittal No. 07 62 00A – Product Data
 - 1. Submit product data for each specified item.
 - 2. Describe material profile, jointing pattern, jointing details, fastening methods, and installation details.
- B. Submittal No. 07 62 00B – Shop Drawings
 - 1. Clearly indicate dimensioning, layout, general construction details including closures, flashings, locations and types of sealants, anchorages, and method of anchorage.

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- C. Submittal No. 07 62 00D – Installation Instructions
 - 1. Submit manufacturer's installation instructions.

- D. Mockup Samples: Build sheet metal mockups to demonstrate qualities of materials and execution and aesthetic effects of the following conditions. Include fasteners, cleats, clips, closures, and other attachments.
 - 1. Parapet coping flashings.
 - 2. Roof penetration flashings.
 - 3. Roof edge termination flashings.
 - 4. Door and window head and sill flashings.
 - 5. Gutters.
 - 6. Exposed trim and fascia.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

- B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

- C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.7 WARRANTY

- A. Special Warranty: Provide for correcting failure of metal flashing system to resist penetration of water and damage from wind.
 - 1. Special Warranty Period: Two years.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Galvanized Steel: Zinc-coated (galvanized) steel sheet, Class A250 coating. 24 gauge unless noted otherwise on drawings.

- B. Aluminum: ASTM B209 minimum thickness .0603".

- C. Lead Sheet: ASTM B749, Type L51121, copper-bearing, 4 lbs. per square foot.

2.2 ACCESSORIES

- A. Flashing and Sheet Metal:
 - 1. Provide heavier gauge metal where recommended by SMACNA Manual for size of component.
 - 2. Mill phosphatized where indicated to be field painted.

- B. Solder and Fasteners: As recommended by SMACNA and complying with applicable codes and regulations; hot dipped galvanized minimum coating comparable to G90.

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- C. Concealed Sealant: Butyl type for use in conjunction with sheet metal; non-staining; non-corrosive; non-shrinking and non-sagging; ultra-violet and ozone resistant for exterior concealed applications.
- D. Separation Coating: Tremco 201/60R, Vulkem 201R.
- E. Sealing Compound: Equal to Tremco/Vulkem 245.
- F. Underlayment:
 - 1. Waterproof: Grace "Vicor V40".
 - 2. Slip Sheet: Rosin sized paper – 3 lbs/10 sq. ft.
- G. Fastener: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.
 - 1. Exposed Fasteners: Heads matching color of sheet metal by means of plastic caps or factory-applied coating.
 - 2. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.
 - 3. Blind Fasteners: High-strength aluminum or stainless-steel rivets.
 - 4. Spikes and Ferrules: Same material as gutter; with spike and ferrule matching internal gutter width.
- H. Drawbands: Stainless-steel hose clamp; worm drive.

2.3 MANUFACTURED SHEET METAL FLASHING AND TRIM

- A. Reglets: Units of type, material, and profile indicated, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated, with factory-mitered and –welded corners and junctions.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Fry Reglet Corporation
 - 1) Surface-Mounted Type: Model SM
 - 2) Stucco Type: Model ST
 - 3) Concrete Type: Model CO
 - 4) Masonry type: Model MA
 - 2. Material: Stainless Steel, 0.0188 inch thick (26 gauge).
 - 3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
 - 4. Stucco Type: Provide with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
 - 5. Concrete Type: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
 - 6. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
 - 7. Flexible Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where drawings show reglet without metal counterflashing.
 - 8. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counter flashing lower edge.

2.4 FABRICATION

- A. Fabricate sheet metal in accordance with SMACNA Architectural Sheet Metal Manual.
- B. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
 - 1. Fabricate corners and intersections in shop with solder joints; watertight fabrication.
- C. Form sections in longest practical lengths; make allowance for expansion at joints.
- D. Hem exposed edges on underside 1/2"; miter and seam corners.
- E. Backpaint flashings with heavy bodied bituminous paint to a minimum dry film thickness of 15 mil. where in contact with cementitious materials or dissimilar metals.
- F. Form pitch pans watertight, with minimum 4" upstand and 4" flanges; form pans minimum 6" wider than item passing through roof membrane.
- G. Form umbrella flashings with minimum 2" overhang, to shed water away from pitch pans.
- H. Form material with standing seam. Solder and seal metal joints. After soldering, remove flux. Wipe and wash solder joints clean.
- I. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

2.5 WALL FABRICATIONS

- A. Openings Flashing in Frame Construction: Fabricate head, sill, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch high end dams.
 - 1. Material: Galvanized steel.
- a. Thickness: 0.0299 inch (22 gauge).

2.6 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within 1/2 of the range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved samples and are assembled or installed to minimize contrast.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions with installer present, to verify actual locations, dimensions, and other conditions affecting performance of work.
 - 1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
 - 1. Torch cutting of sheet metal flashing and trim is not permitted.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with separation coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.
 - 1. Coat sides of uncoated aluminum, stainless-steel, and lead sheet metal flashing and trim with separation coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene underlayment.
 - 3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.
- C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
- D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.
- E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
 - 1. Space cleats not more than 12 inches apart, except where indicated as continuous. Anchor each cleat with two fasteners. Bend tabs over fasteners.
- F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner of intersection. Where lapped or bayonet-type expansion, provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed with joints.
- G. Fasteners: Use fasteners of sizes that will penetrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
 - 1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless steel fasteners.
 - 2. Aluminum: Use aluminum or stainless steel fasteners.

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3. Stainless Steel: Use stainless steel fasteners.

- H. Seal joints with elastomeric sealant as required for watertight construction.
 1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F, set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F.
 2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Protection".

- I. Solder Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pretin edges of sheets to be soldered to a width of 1-1/2 inches except where pretinned surface would show in finished work.
 1. Do not solder prepainted, metallic-coated steel and aluminum sheet.
 2. Pretinning is not required for lead.
 3. Do not use open-flame torches for soldering. Heat surfaces to receive solder and flow solder into joints. Fill joints completely. Completely remove flux and spatter from exposed surfaces.

3.3 WALL FLASHING INSTALLATION

- A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall opening components such as windows, doors, and louvers.

- B. Reglets: Install reglets in accordance with manufacturer's written instructions for applicable wall construction.

- C. Openings Flashing in Frame Construction: Install continuous head, sill, and similar flashings to extend 4 inches beyond wall openings.

3.4 MISCELLANEOUS FLASHING INSTALLATION

- A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.5 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

- B. Clean and neutralize flux materials. Clean off excess solder and sealants.

- C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain a clean condition during construction.

- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar repair procedures.

**SECTION 07 62 00
SHEET METAL FLASHING AND TRIM**

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide firestopping as required to maintain effective barrier against spread of flame, smoke and gases, and to retain integrity of time-rated construction as indicated and at following types of locations.
 - 1. Provide at fire rated system perimeters, and at duct, conduit, piping penetrations through time-rated construction, and as required by applicable codes.
 - 2. Coordinate requirements for firestopping with work involving penetrations through fire rated assemblies.
 - a. Review Project and Contract Documents to ascertain extent of penetrations in fire rated assemblies and methods included in other sections for maintaining fire ratings.

1.2 DEFINITIONS

- A. Fire Rated: Have the ability to withstand the effects of fire for a specified time period, as determined by qualified testing.
- B. Fire Rated Assembly: A floor, wall, or other partition able to withstand a design fire and hose stream test without failure.
- C. Fire Resistance Rating: The time, in hours, for which the rated assembly can withstand the effects of fire without burn-through or structural failure.
- D. Firestop: A means of sealing openings in fire rated assemblies to preserve or restore the fire resistance rating.
- E. Firestop System: The combination of materials and/or devices, including the penetrating items, required to makeup a complete firestop.
- F. Penetrating Item: A pipe duct, conduit, cable, or other element passing through an opening in a fire rated assembly.

1.3 SYSTEM DESCRIPTION

- A. Design Requirements: Provide materials tested in accordance with following standards, unless otherwise specified.
 - 1. American Society for Testing and Materials (ASTM) Publications:
 - a. ASTM E84, Surface Burning Characteristics of Building Materials.
 - b. ASTM E119, Fire Tests of Building Construction and Materials.
 - c. ASTM E814, Fire Tests of Through-Penetration Fire Stops.
- B. Technical Requirements:
 - 1. Designs selected for installation shall provide a fire resistance rating at least equal to the hourly resistance rating of the floor, wall or partition into which the firestop design is to be installed.
 - 2. Firestop systems and materials shall not require special tools for installation and shall not emit hazardous, combustible or irritating fumes during installation, curing or use.
 - 3. When more than one firestop design is applicable, individual product

characteristics should be evaluated for secondary benefits in performance, e.g., environmental/water sealing, or ease of installation/modification.

- C. Structural Considerations:
1. Firestop systems do not re-establish the structural integrity of load bearing partitions. Notify Architect prior to drilling or coring operations in any load bearing assembly.
 2. Firestop systems are not intended to support live loads and traffic. Curbs or steel plates may be required to restrict or accommodate potential traffic. Contractor shall notify Architect if he has reason to believe these limitations may be violated.

1.4 SUBMITTALS

All submittals shall be made under the provisions of Section 01 33 00.

- A. Submittal No. 07 84 00A – Product Data
1. Submit manufacturer's technical data for each product, which includes, at a minimum, product description, specification and storage requirements.
 2. Submit Underwriter's Laboratory approval numbers for required fire ratings; approval of other laboratories contingent upon acceptance of applicable authorities firestop design basis documents.
- B. Submittal No. 07 84 00D – Installation Instructions: Submit product installation procedures and requirements.
- C. Submittal No. 07 84 00E – Material Safety Data Sheets: Submit Material Safety Data Sheets with product delivered to jobsite.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with California Building Code, Chapter 7 requirements for firestopping, including both F Ratings and T Ratings as applicable.

1.6 DELIVERY, STORAGE, AND HANDING

- A. Deliver materials in their original unopened packages and store in location providing protection from damage and exposure to elements.
- B. Damaged or deteriorated materials shall be removed from site.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. 3M Fire Protection Products Div./3M Fire Barrier Products.
- B. Specified Technologies, Inc. (STI)/SpecSeal and Pensil Firestopping.
- C. Hilti, Corp./Hilti Firestop Systems.
- D. W.R. Grace & Co./Flamesafe Products.

E. Substitutions: Refer to Section 01 62 00.

2.2 MATERIALS

- A. General: Choose products and methods meeting applicable codes and Specification requirements for each firestopping application, subject to Architect's acceptance.
- B. Acceptable manufacturers include:
 - 1. Hilti, Corp./Hilti Firestop Systems.
 - 2. Bio Fireshield.
 - 3. Metalines, Inc.
 - 4. Hevi-Duty Nelson Unit of General Signal/Firestop Products.
 - 5. Specified Technologies, In. (STI)/SpecSeal and Pensil Firestopping
 - 6. 3M Fire Protection Products Div./3M Fire Barrier Products.
- C. Firestopping Materials: Furnish materials for penetrations in time-rated floor, wall, and partition assemblies capable of preventing passage of flame, smoke, and hot gases.
 - 1. Penetration Test: Furnish materials passing ASTM E814 for penetration fire stopping indicating maintenance of time-rated adjacent assemblies.
- a. Additional Tests: Where required by applicable authorities, provide materials passing ASTM E119 time-temperature fire conditions for fire ratings indicated for assemblies.
 - 2. Flame Spread: ASTM E84 flame spread rating of 25 or less.
 - 3. Smoke Density: ASTM E84 smoke density rating of 450 or less.
- D. Firestopping: Maintain fire rating of assembly in which firestopping is installed, such as floor, partition, or wall, in accordance with ASTM E119 tests.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine surfaces and conditions receiving or affecting the work. Do not proceed until unsuitable conditions are corrected.

3.2 INSTALLATION

- A. Install firestopping in accordance with manufacturer's recommendations and installation instructions.
- B. Completely fill void space with firestopping materials regardless of geometric configuration, subject to tolerances established by firestopping manufacturer.
- C. Apply firestopping materials at penetrations of pipes, conduits, and ducts prior to application of insulation.
 - 1. Remove insulation already in place at penetration prior to application of firestopping materials.
- a. Insulation which meets requirements for fire ratings are excepted from this requirement.

3.3 FIELD QUALITY CONTROL

**SECTION 07 84 00
FIRESTOPPING**

- A. Inspection: Keep area of work available for inspection by Architect and applicable authorities before and after application of firestopping.

3.4 REPAIR AND CLEAN-UP

- A. Repair damage caused by work of this section; clean exposed surfaces soiled by work and leave work ready to receive following work.
- B. On completion of work, remove debris, excess materials, and equipment from site.

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide joint sealers, for interior and exterior joints not specified elsewhere, with backing rods and accessories as required for complete installation.
1. Joint sealers include sealants and caulking as indicated.

1.2 SYSTEM DESCRIPTION

- A. Performance Requirements:
1. Select materials for compatibility with joint surfaces and indicated exposures.
 2. Where not indicated, select modulus of elasticity and hardness or grade recommended by manufacturer for each application indicated.
 3. Comply with applicable limitations on volatile organic compound (VOC) emissions.

1.3 SUBMITTALS

All submittals shall be made under the provisions of Section 01 33 00.

- A. Submittal No. 07 92 00A – Product Data
1. Submit product data for all specified products.
 2. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.
- B. Submittal No. 07 92 00C – Samples for Verification
1. Submit samples of specified products.
- C. Submittal No. 07 92 00D – Installation Instructions
1. Submit manufacturer's installation instructions
 2. Submit manufacturer's certificate under provisions of Section 01 33 00 that products meet or exceed specified requirements.
 3. Furnish certification indicating installers are trained in proper use of specified products, qualified, and familiar with proper installation techniques.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Firm with minimum five years successful experience on projects of similar type and size, using specified products.
1. Installers shall be familiar with proper application procedures to ensure maximum joint sealer expansion and contraction capabilities.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, cure time, and mixing instructions.

1.6 SITE CONDITIONS

- A. Do not proceed with installation of joint sealers under unfavorable weather conditions.

- B. Install elastomeric sealants when temperature is in lower third of temperature range recommended by manufacturer.
- C. Do not install solvent curing sealants in enclosed building spaces.

1.7 WARRANTY

- A. Special Warranty: Repair or replace joint sealers that fail to perform as intended, because of leaking, crumbling, hardening, shrinkage, bleeding, sagging, staining and loss of adhesion.
 - 1. Special Warranty Period: Three years.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Elastomeric Sealants:
 - 1. Single Component Low Modulus Silicone Sealant: ASTM C920 Type S, Class 25, Grade NS; minimum 50% expansion and compaction capability.
 - a. Provide at exterior locations not exposed to traffic (can be used at concrete expansion joints).
 - b. Manufacturers:
 - 1) General Electric Co./Silpruf, Silglaz or GESIL.
 - 2) Dow Corning Corp./790 or 795.
 - 3) Pecora Corp./864 Architectural Silicone.
 - 4) Tremco/Spectrum 3.
 - 5) Substitutions: Refer to Section 01 62 00.
 - 2. Multi-Component Polyurethane Sealant: ASTM C920, Type M, Grade P, Class 25, self-leveling; minimum 25% expansion and compaction capability.
 - a. Provide following at traffic bearing locations (can be used at concrete expansion joints).
 - b. Manufacturers:
 - 1) Pecora Corp./NR-200 Urexpan.
 - 2) Tremco/Vulkem 245.
 - 3) Sonneborn Division of ChemRex /SL 2
 - 4) Substitutions: Refer to Section 01 62 00.
 - 3. Mildew-Resistant Silicone Rubber Sealant: ASTM C920, Type S, Grade NS, Class 25, compounded with fungicide, specifically for mildew resistance and recommended for interior joints in wet areas.
 - a. Provide at interior joints in wet areas.
 - b. Manufacturers:
 - 1) General Electric Co./SCS 1702 Sanitary Sealant.
 - 2) Dow Corning Corp./786 Bathtub Caulk.
 - 3) Pecora Corp./863 #345 White.
 - 4) Tremco/Tremsil 200.
 - 5) Substitutions: Refer to Section 01 62 00.
- B. Non-Elastomeric Sealants:
 - 1. Acrylic-Emulsion Sealant: ASTM C834 acrylic or latex-rubber-modified acrylic sealant, permanently flexible, non-staining and non-bleeding; recommended for general interior exposure; compatible with paints specified in Section 09 90 90.
 - a. Provide at general interior applications.
 - b. Manufacturers:
 - 1) Pecora Corp./AC-20.
 - 2) Sonneborn Division of ChemRex/Sonolac.

- 3) Tremco/Ultrem 1500
 - 4) Substitutions: Refer to Section 01 62 00.
- C. Miscellaneous Materials:
- 1. Primers/Sealers: Non-staining types recommended by joint sealer manufacturer for joint surfaces to be primed or sealed.
 - 2. Joint Cleaners: Non-corrosive types recommended by joint sealer manufacturer; compatible with joint forming materials.
 - 3. Bond Breaker Tape: Polyethylene tape as recommended by joint sealer manufacturer where bond to substrate or joint filler must be avoided for proper performance of joint sealer.
 - 4. Sealant Backer Rod: Compressible polyethylene foam rod or other flexible, permanent, durable non-absorptive material as recommended by joint sealer manufacturer for compatibility with joint sealer.
- a. Oversize backer rod minimum 30% to 50% of joint opening.
- D. Colors: Provide colors indicated or as selected by Architect from manufacturer's full range of colors.

PART 3 EXECUTION

3.1 PREPARATION

- A. Prepare joint surfaces in accordance with ASTM C1193 and as recommended by joint sealer manufacturer.
- B. Clean joint surfaces immediately before installation of joint sealer; remove dirt, insecure materials, moisture and other substances that could interfere with bond of joint sealer.
- C. Prime or seal joint surfaces where recommended by joint sealer manufacturer; do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- D. Ensure protective coatings on surfaces in contact with joint sealers have been completely stripped.

3.2 INSTALLATION

- A. Comply with manufacturer's printed instructions and ASTM C1193, except where more stringent requirements are shown or specified.
- B. Set sealant backer rods at proper depth or position in joint to coordinate with other work, including installation of bond breakers and sealant; do not leave voids or gaps between ends of backer rods.
 - 1. Do not stretch, twist, puncture or tear backer rods.
- C. Install bond breaker tape where required by manufacturer's recommendations to ensure joint sealers will perform properly.
- D. Size materials to achieve required width/depth ratios.
- E. Employ installation techniques that will ensure joint sealers are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of bond surfaces equally on opposite sides.

**SECTION 07 92 00
JOINT SEALANTS**

- F. Joint Configuration: Fill sealant joint to a slightly concave surface, slightly below adjoining surfaces, unless otherwise indicated.
- G. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture or dirt.
- H. Install joint sealers to depths recommended by joint sealer manufacturer but within the following general limitations, measured at center (thin) section of bead.
 - 1. Horizontal Joints: 75% width with minimum depth of 3/8".
 - 2. Elastomeric Joints: 50% width with minimum depth of 1/4".
 - 3. Non-Elastomeric Joints: 75% to 125% of joint width.
- I. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces.
 - 1. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.
- J. Cure joint sealers in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability.
- K. Maintain finished joints free of embedded matter, ridges and sags.

3.3 CLEANING AND REPAIRING

- A. Clean all work and adjacent soiled surfaces.
- B. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.4 PROTECTION OF FINISHED WORK

- A. Protect sealants until cured.

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide full flush steel doors and pressed steel frames, including anchors and silencers.
 - 1. Pressed steel frames include both door and window frames.

1.2 REFERENCES

- A. Steel Door Institute (SDI): SDI-100 (ANSI/SDI A250.8) - Recommended Specifications - Standard Steel Doors and Frames.
- B. National Association of Architectural Metal Manuf. (NAAMM): Hollow Metal Manual.
- C. ASTM E152: Methods of Fire Test of Door Assemblies.
- D. NFPA 105: Smoke Control Guide
- E. ANSI 117.1: Handicap Code
- F. Underwriters Laboratories: Standards as applicable to fire rated doors and frames.
 - 1. Materials tested, labeled and inspected by Warnock Hersey International are acceptable upon approval of authorities.

1.3 SUBMITTALS

All submittals shall be made under the provisions of Section 01 33 00.

- A. Submittal No. 08 11 00A - Product Data: Furnish manufacturer's literature.
- B. Submittal No. 08 11 00B – Shop Drawings
 - 1. Submit complete shop drawings listing openings numerically by architect's opening numbers showing product construction, sizes, anchors, reinforcing, cutouts, elevations, and finish.
 - 2. Submit notes with shop drawings indicating items that vary from plans and specifications, have conflicts for label compliance, are not in compliance with standards referenced above, have door, frame, hardware or function conflicts, or require review and clarification by architect.
- C. Submittal No. 08 11 00D – Installation Instructions
 - 1. Submit installation instructions or field delivery receipt.
 - 2. Instructions for installation, maintenance, and preparation for field painting supplied with delivery of material to jobsite.
- D. Submittal No. 08 11 00E – Schedule: Prepared by supplier, using same reference numbers for details and openings as those on Drawings.

1.4 DELIVERY, STORAGE AND PRODUCT PROTECTION

- A. Doors and Frames will be delivered to the job site undamaged with the doors

properly protected by cardboard and plastic covering and shall be stored in upright positions, 4 inches off the floor or ground with proper separation for air circulation and shall be stored inside or under complete weather protection. Damage not acknowledged at delivery shall be considered job site damage and the responsibility of the contractor.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Steel Door Products:
 - 1. Curries 747 Series
 - 2. Steelcraft B14 Series
 - 3. The Ceco Corporation High Frequency, Steel Stiffened

- B. Acceptable Steel Frame Products:
 - 1. Curries
 - 2. Steelcraft
 - 3. The Ceco Corporation

- C. Interior Frames:
 - 1. Timely.
 - 2. Typical manufacturers listed.

- D. Substitutions: Refer to Section 01 62 00.

2.2 MATERIALS

- A. Doors: Hollow metal flush steel door, 1-3/4" thick.
 - 1. Interior Doors: Minimum 14 gage.
 - 2. Exterior Doors: Minimum 14 gage galvanized.
 - 3. Glazed and Louvered Doors: Provide systems as indicated on Drawings.
 - 4. Fabricate doors from cold rolled, stretcher leveled, prime quality steel to sizes and designs as noted in the plans.
 - 5. Door shall have full flush faces that will show no weld or fabrication marks when painted and viewed from an oblique angle. Stile and rail doors may have face seams at joints.
 - 6. Doors shall be reinforced, stiffened, sound deadened, and insulated by one of the following methods providing the manufacturer furnishes a certification of tested compliance by a recognized testing laboratory to the minimum requirements noted below:
 - a. 90 LB Phenolic Resin impregnated honeycomb core completely filling the inside of the door and laminated to the inside faces of the door panels.
 - b. Steel hat channels at 6" centers welded to both faces and 14-gauge top and bottom welded in channels. Completely fill all internal voids with an inert material to sound deaden and insulate the door.
 - c. Polystyrene foam permanently and fully bonded to the entire surface of face skins.
 - 7. Minimum performance requirements:
 - a. U Factor: Minimum .41
 - b. STC Factor: Minimum 34
 - c. Swing Test: ANSI A151.1 Level "A" 1,000,000 cycle test with twist test
 - d. Corrosion: Pass ANSI A224.1
 - 8. Reinforcement:
 - a. Hinges: Minimum 8 gauge

**SECTION 08 11 00
METAL DOORS AND FRAMES**

- b. Locks: Minimum 16 gauge
 - c. Surface Hardware: Minimum 12 gauge
 - d. Panics fully reinforced - thru bolting not acceptable.
 - 9. Construction: All out swinging exterior doors shall have top caps. Doors will be fully reinforced for all hardware to be surface applied and no hardware will be screwed to the surface skin of the door except kickplates, edging, push plates or nameplates.
 - 10. Full glass doors (40% or more door face in glass) shall be constructed of 16 gauge steel closed tube type construction. Cutout in standard slab doors are not acceptable.
 - 11. Door Design, Clearances, and Locations: Doors shall be beveled 1/8" in 2" at both edges. Square edge doors and doors with loose hinge fillers will not be acceptable.
 - a. Hinge and strike clearance: 3/32"
 - b. Head: 1/8"
 - c. Floor: (unless otherwise noted) 3/4"
 - d. Meeting Stiles: 3/32"
 - e. Hardware locations: Comply with ADA and CBC requirements; refer to drawings.
 - f. Glazed Openings: Unless otherwise noted use bevel aluminum glass stop with removable snap-in stops on the non-security side. Provide steel glass stop per UL requirements on all label doors with screw-attached stops. Provide special steel glass stop for insulated glass designed to adequately secure glass. Glass stop shall fully surround door faces and seal inner core of door. The flanges shall not extend more than 1/16" from the face of the door. The hollow metal supplier shall reinforce any glass cutout adequately to insure that the door will have the same structural integrity as a flush door and that it will provide heavy-duty service considering the location, frequency of use and hardware to be installed. The hollow metal supplier shall assume responsibility for insuring that glazing stops do not conflict with flat bar panics.
- B. Frames:
- 1. Exterior Frames: Welded (pre-assembled) type; minimum 14 gage, galvanized.
 - a. Frames shall be full face welded, square, and accurately sized and have a welded spreader bar at the base for field removal. Acceptable tolerances per SDI 117.
 - 2. Door Silencers: Manufacturer's standard resilient type; removable for replacement.
- C. Glazing Stops: Full flush type with glass centered in opening, unsecured side integral with unit, secured side fastened with flush, countersunk Allen type fasteners; minimum 16 gage.
- D. Jamb Anchors:
- 1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
 - a. Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Three anchors per jamb up to 60 inches high
 - 2) Four anchors per jamb from 60 to 90 inches high
 - 3) Five anchors per jamb from 90 to 96 inches high
 - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high
 - 5) Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.
 - 2. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors, not less than two anchors in each jamb.

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METAL DOORS AND FRAMES**

3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch dia. bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location. Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.
- E. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
- F. Door Louvers: Weatherproof Z-shaped blades with U-shaped frames; 1-3/8" thick; blades 1-1/2" on center; 16 gage welded construction.
 1. Provide removable bird screens on interior faces, 1/2" x 1/2" bronze wire mesh.

2.3 FABRICATION

- A. Conform to requirements of SDI (ANSI A250 Series) or NAAMM.
- B. Reinforce and prepare doors and frames to receive hardware.
 1. Refer to Section 08 71 00 for hardware requirements.
 2. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 3. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
 4. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
 5. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 electrical Sections.
- C. Frames:
 1. Welded Frames: Accurately form and cut mitered corners of welded type frames; weld on inside surfaces; grind welded joints to smooth uniform finish.
 2. Knocked Down Frames: Accurately form and miter interlocking joints of knocked down frames to maintain hairline alignment of parts when field assembled.
 3. Head Reinforcement: Reinforce frames wider than 4'-0" with minimum 12 gage formed steel channels welded in place, flush with top of frames.
 4. Doors at Glazed Panels: Reinforce jambs and heads of frames for doors which occur adjacent to glazed sidelights and partitions.
- D. Door Silencers:
 1. Place minimum three single bumpers on single door frames; space equally along strike jambs.
 2. Place minimum of two single bumpers on double door frames; place on frame heads.
- E. Provide jamb anchors per SDI-100 (ANSI/SDI 250.8) and NAAMM; weld floor jamb anchors in place.
- F. Provide double doors tested and approved without astragals.
- G. Edge Clearances:
 1. Between Doors and Frames: Maximum 1/8" at head and jambs.
 2. Door Sills (No Threshold): Maximum 3/8".
 3. Door Sills (Threshold): Maximum 3/4" above finished floor.

**SECTION 08 11 00
METAL DOORS AND FRAMES**

4. Between Edges of Pairs of Doors: Maximum 1/8".
 5. Fire Rated Doors: As required for fire ratings.
- H. Finish: Comply with requirements of Section 09 90 00 for primer including application and compatibility with specified finishes.
1. Interior Units: Prime paint.
 2. Exterior Exposed Units: Apply minimum A60 non-spangle galvanized coating, ASTM A924 and A653.
- a. Surface treat after galvanizing to remove oils and prepare for painting and apply one coat of primer; comply with requirements in Section 09 90 00 – Painting and Coating.

PART 3 EXECUTION**3.1 INSTALLATION**

- A. Install doors and frames in accordance with SDI-100 (ANSI/SDI A250.8) and ANSI/SDI A250.11 or NAAMM "Hollow Metal Manual" and with manufacturer's recommendations and installation instructions.
1. Install fire rated units in conformance with fire label requirements and NFPA 80.
- B. Install doors and frames plumb and square, and with maximum diagonal distortion of 1/16".
1. Coordinate hardware installation with requirements of Section 08 71 00.
 2. Coordinate glass installation with requirements of Section 08 80 00.
- C. Remove and replace doors and frames damaged during delivery, storage, installation and construction.
1. Paste filler repair shall not be permitted.
- D. After installation, touch-up scratched paint surfaces.

END OF SECTION

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PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes:
1. Provide standard and fire rated plastic laminate-faced doors.
 2. Install door hardware furnished under Section 08 71 00.

1.2 REFERENCES

- A. AWI Quality Standards of Architectural Woodwork Institute.
- B. NWMA Standard Procedures and Recommendations for Factory Machining Architectural and Plastic Faced Flush Doors for Hardware.
- C. Underwriters Laboratories Inc. (UL): Building Materials Directory.
1. Materials tested, labeled and inspected by Warnock Hersey International are acceptable upon approval of authorities.
- D. Factory Mutual Engineering Corporation (FM), as applicable to fire rated wood doors.
- E. DHI - Door Hardware Institute: "Installation Guide for Doors and Hardware".
- F. NFPA 80 – National Fire Protection Association.

1.3 REGULATORY REQUIREMENTS

- A. Architectural wood doors furnished for this project shall be in full compliance with the CBC, NFPA 80, NFPA 101, NFPA 105 and ADA.

1.4 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

- A. Submittal No. 08 14 23.16A - Product Data: Furnish manufacturer's literature.
- B. Submittal No. 08 14 23.16B - Shop Drawings: Indicate general construction, jointing methods, hardware locations, and locations of cut-outs.
1. For doors with glazed lites, indicate clearly the typed, materials, and fire ratings of glass stops proposed.
- C. Submittal No. 08 14 23.16C - Samples:
1. Furnish sample of door corner indicating panel configuration.
 2. Submit two door corner samples in specified plastic laminate finish, including edge laminate, for each type of door construction required (i.e. fire-rated).

1.5 PROJECT CONDITIONS

- A. Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized in accordance with referenced standards requirements applicable to Project location.

**SECTION 08 14 23.16
PLASTIC-LAMINATE-FACED WOOD DOORS**

1.6 QUALITY ASSURANCE

- A. Forest Certification: Provide doors made from wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

1.7 WARRANTY

- A. Special Warranty: Provide for replacing, rehangng and refinishing wood doors exhibiting defects in materials or workmanship including warp and delamination.
1. Special Warranty Period: Five years.

PART 2 PRODUCTS**2.1 MANUFACTURERS**

- A. Weyerhaeuser Company.
- B. Eggers Industries.
- C. Algoma Hardwoods, Inc.
- D. Substitutions: Refer to Section 01 62 00.

2.2 MATERIALS

- A. Construction:
1. 5 ply hot press construction or 7 ply cold press construction
 2. Core glue bonded to stiles and rails then thickness sanded prior to door lay-up. No mechanical fasteners may be used.
 3. Institutional solid particle board core.
 4. SLM edges with veneer covering and SLM blocking for hardware.
 5. Provide doors made with adhesives and composite wood products that do not contain urea-formaldehyde resins.
- B. Fire Rated Doors: 1-3/4" thick, match non-rated door appearance; comply with UBC Standard 7-2; UL or Warnock Hersey rated.
1. Labels: Place fire rating labels where visible when doors are installed, in opened position.
 2. Fire Ratings: Refer to Drawings for fire rating requirements.
 3. Core: Use wood core construction for 20 minute rated flush doors, mineral core permitted for longer ratings.
 4. Temperature Rise Rating: Provide doors with maximum 450°F Temperature Rise Rating in 30 minute fire exposure period at doors into exit enclosures.
- C. Plastic Laminate Faces:
1. Decorative 3-ply laminate face from the following manufacturers: Formica, Nevamar or Wilsonart.
 2. High pressure decorative laminate general purpose grade 50 (GP50 - .050" thick). complying with NEMA standard LD-3.
 3. Apply faces prior to edges, ease all corners.

2.3 FABRICATION

SECTION 08 14 23.16
PLASTIC-LAMINATE-FACED WOOD DOORS

- A. Fabricate doors in accordance with requirements of specified standards.
 - 1. Prefit wood doors.
 - 2. Prepare doors to receive hardware, refer to Section 08 71 00 for hardware requirements and templates.
 - 3. Factory machine doors for mortise hardware.
- B. Bevel strike edge of single-acting doors, 1/8" in 2".
- C. Fire Rated Doors: Fabricate fire rated doors in accordance with requirements of Underwriters' Laboratories (UL) or Warnock Hersey International.
 - 1. Provide fire rated doors with maximum allowable edge strips, of wood species to match face veneers.
 - 2. Provide doors with blocking designed for addition of closers, even where doors are not indicated to receive closers.
 - 3. Provide astragals and metal edge trim for double doors, in accordance with requirements for fire rated doors.
- D. Prime Paint: Conform to requirements specified in Section 09 90 00 – Painting and Coating.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install wood doors in accordance with manufacturer's recommendations and installation instructions, and reference standards, plumb and square, and with maximum diagonal distortion of 1/16".
 - 1. Coordinate hardware installation with requirements of Section 08 71 00 – Door Hardware.
 - 2. Install fire rated wood doors in accordance with requirements for specified fire label and for requirements of NFPA 80.
 - a. Field cutting of fire rated doors shall not be acceptable.
- B. Rehang or replace doors that do not swing or operate freely.
- C. Protection: Protect doors as recommended by door manufacturer to ensure doors are without damage at time of Substantial Completion.

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide hardware for hollow metal and wood doors.
1. Provide cylinders for doors fabricated with hardware.

1.2 REFERENCES

- A. ANSI A115 and A115W Series: Door and Frame Preparation Standards.
- B. ANSI A156.1 through A156.20: Standards for various hardware items.
- C. National Fire Protection Association: NFPA 80, Fire Doors and Windows.
- D. California Building Code: California Code of Regulations, Title 24, Part 2.
- E. Americans with Disabilities Act Accessibility Guidelines (ADAAG).

1.3 SYSTEM DESCRIPTION

- A. Products: Provide each type of hardware (hinges, pivots, locksets, latchsets, closers, trim) from single manufacturer unless otherwise indicated in Hardware Schedule.
1. Provide products by manufacturers specified and manufacturers listed in Hardware Schedule, with references to catalog numbers and designations.
- B. Fire Rated Doors: Comply with requirements of Uniform Building Code Standard 7-2, NFPA 80 and applicable codes for fire rated door hardware; provide hardware bearing Underwriters Laboratory (UL) labels.
1. Doors indicated in fire rated partitions and walls shall be positive latching and self closing, with smoke gaskets.
 2. Smoke Control in Pressurized Areas: Provide automatic door bottoms in addition to standard smoke gaskets for fire and smoke rated doors in pressurized areas such as stair wells; comply with applicable code requirements.
- C. Access for Persons with Disabilities: Comply with California Building Code and Americans with Disabilities Act Accessibility Guidelines (ADAAG).

1.4 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

- A. Submittal No. 08 71 00A - Product Data/Cut Sheets: Submit catalog cuts for each type of hardware.
- B. Submittal No. 08 71 00B - Shop Drawings: Indicate locations and mounting heights of hardware.
1. Supply templates to door and frame manufacturers for proper and accurate sizing and locations of cut-outs for hardware.
- C. Submittal No. 08 71 00D - Hardware Schedule: Prepare a vertical schedule of

hardware:

1. Door numbers must be in numerical sequence.
 2. List each opening, door size, door hand, door and frame material, description of to and from, manufacturer's numbers and finish.
 3. Provide seven copies of this schedule and three sets of catalog cut sheets.
 4. Hardware supplier shall retype schedule when changes occur during the project and supply new schedules, at no additional expense.
- D. Submittal No. 08 71 00E - Keying Schedule: Coordinate directly with Owner's Representative.
- E. Submittal No. 08 71 00F - Closeout Submittal: Record actual locations of installed cylinders and master key codes on Project Record Documents.

1.5 QUALITY ASSURANCE

- A. Supplier Qualifications: Recognized builder's hardware supplier with minimum five year's successful experience in scheduling and furnishing hardware.
1. Provide services of architectural hardware consultant to supervise hardware supply.
- B. Pre-Installation Meeting: Convene pre-installation meeting prior to commencing work of this section. Include persons involved with installation of doors, frames, and hardware.
- C. Upon receipt of approved Hardware Schedule, architectural hardware consultant shall attend keying conference with Owner and Architect.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hardware in manufacturer's original packages, marked for intended opening and use.
- B. Pack complete with necessary screws, bolts, keys, instructions, and installation template, if necessary, for spotting mortising tools.
- C. Upon delivery, furnish complete list of hardware for checking, clearly marked to correspond with marking on each package.
1. Review list for completeness and accuracy.

1.7 OPERATION AND MAINTENANCE DATA

- A. Provide manufacturer's parts list and maintenance instructions for each type of hardware supplied and necessary wrenches and tools required for proper maintenance of hardware.
- B. Contractor will provide owner with all wrenches and tools included with hardware including extra screws.

1.8 WARRANTY

- A. Provide 1-year warranty covering products and workmanship. Warranty period for closers shall be 10 years.

PART 2 PRODUCTS**2.1 MATERIALS**

- A. General: Review Drawings for hardware group locations and door types; where not fully covered in Hardware Schedule, comply with following general requirements; inform Architect where conflicts occur.
 - 1. Provide hardware items with accessories complete to function as intended.

- B. Hinges and Butts: ANSI A156.1; comply with following unless otherwise indicated.
 - 1. Manufacturers:
 - a. McKinney Products Co., Division of Essex Industries.
 - b. Stanley Hardware Division of Stanley Works.
 - c. Substitutions: Refer to Section 01 62 00.
 - 2. Doors 1-3/4" Thick: 4-1/2" heavy weight, extra heavy weight ball or oilite bearing where over 40" wide.
 - a. Provide widths sufficient to clear trim projection when door swings 180 degrees.
 - b. Doors 1-3/8" Thick: 3-1/2" size.
 - 3. Provide minimum 3 hinges to 90" high, 4 hinges to 120" high for each door leaf, unless otherwise indicated.
 - a. Two hinges acceptable for interior hollow core wood doors and for doors less than 36" high.
 - 4. Provide nonferrous butts with non-removable pins at exterior and locked outswinging doors, non-rising at interior doors; stainless steel where labeled; steel butts at labeled interior doors.
 - 5. Provide ball bearing or oilite bearing hinges at doors with closers.
 - 6. Tips: Flat button tips with matching plug.

- C. Locking Devices: Provide of metal matching specified finish; interior parts of steel and zinc-dichromate plating, to resist rusting and corrosion; do not supply plastic, die-cast or aluminum mechanisms.
 - 1. Manufacturers:
 - a. Schlage Lock Co.
 - b. Substitutions: Refer to Section 01 62 00.
 - 2. Type:
 - a. Mortise Locksets: ANSI A156.13, Series 1000, Grade 1, Mortise Type with 6 pin tumbler cylinders, except where otherwise indicated in Hardware Schedule.
 - b. Cylindrical Locksets: ANSI A156.2, Grade 2, privacy type Bored Type, except where otherwise indicated in Hardware Schedule.
 - c. Electromagnetic Locks: ANSI A156.23, electrically powered, with electromagnet attached to frame and armature plate attached to door.
 - d. Cylindrical Latchsets: ANSI A156.2, Grade 2, Bored Type (cylindrical), except where otherwise indicated in Hardware Schedule.
 - e. Exit/Panic Devices: ANSI A156.3, Grade 1, with 6 pin tumbler cylinders, except where otherwise indicated in Hardware Schedule.
 - 1) Type: Mortise device with concealed vertical rods unless otherwise indicated.
 - 2) Style: Modern.
 - 3. Lockset and Latchset Design: Solid lever with rose, as selected by Architect.
 - 4. Backset: 2-3/4".
 - 5. Strikes: Furnish standard strikes with extended lips where required to protect trim from being marred by latch bolt; verify type of cutouts provided in metal frames.

- D. Cylinders, Keys, and Keying: Hardware manufacturers shall provide for grand master, master key alike or key different keying as directed by Owner.

**SECTION 08 71 00
DOOR HARDWARE**

1. Manufacturer:
 - a. Schlage Lock Co.
 - b. Substitutions: Refer to Section 01 62 00.
 2. Provide 7 pin tumbler with interchangeable core unless otherwise indicated.
 3. Provide cylinders of extruded brass bar material per ANSI A156.5.
 4. Provide construction cylinders for doors requiring locking during construction; construction cylinders shall be removed and replaced just prior to Owner occupancy.
 5. Submit keys for final use to Owner; provide not less than two keys for each lockset, six of each type and level of masterkey, two grand master keys, and 5% extra blanks; comply with guidelines in ANSI a156.28, Appendix A.
 6. Hardware manufacturers shall key and register lock cylinders.
 7. Key Control System: Provide complete key control system with identification and storage capacity suitable for Project per ANSI A156.5.

- E. Closers: ANSI A156.4, furnish products of one manufacturer; full rack and pinion type with steel spring and non-freezing hydraulic fluid.
 1. Manufacturers:
 - a. LCN Closers Division Schlage Lock Co.
 - b. Substitutions: Refer to Section 01 62 00.
 2. Provide controls for regulating closing, latching, speeds and back check.
 3. Arm types shall suit individual conditions, as approved; supply parallel-arm closers at reverse bevel doors and where doors swing full 180 degrees.
 4. Mount closers on room side or pull side unless otherwise indicated.
 5. Sizes: Adjustable to following maximum door operating pressures:
 - a. Typical Doors: 5 pounds.
 - b. Fire Rated Doors: 15 pounds.
 - c. Make labeled doors self-closing.
 - d. Closers shall be adjusted by factory representative.
 6. Design: ANSI Modern Type with Cover, unless otherwise indicated.

- F. Thresholds, Stops, Trim, and Miscellaneous Hardware: Provide as indicated, as specified, as included in Hardware Schedule, and as required for complete installation.
 1. Manufacturers Specified:
 - a. Pivots per ANSI A156.4: Stanley.
 - b. Exit Devices per ANSI A156.3: Von Duprin.
 - c. Flushbolts per ANSI A156.3: Ives.
 - d. Coordinators: Trimco.
 - e. Kickplates: Trimco.
 - f. Wall/Floorstops per ANSI A156.8: Ives.
 - g. Overhead stops per ANSI A156.8: Glynn-Johnson.
 - h. Thresholds per ANSI A156.21: Pemko.
 - i. Doorsweeps: Pemko.
 - j. Pulls: Trimco.
 - k. Sliding Door Hardware per ANSI A156.14: Henderson.
 - l. Substitutions: Refer to Section 01 62 00.
 2. Approved Substitutes:
 - a. Pivots: McKinney.
 - b. Exit Devices: none.
 - c. Flushbolts: Trimco.
 - d. Coordinators: none.
 - e. Kickplates: none.
 - f. Wall/Floorstops: Trimco.
 - g. Overhead stops: DCI.
 - h. Thresholds: Zero.

- i. Doorsweeps: Zero.
- j. Pulls: none.
- k. Sliding Door Hardware: none.
- l. Substitutions: Refer to Section 01 62 00.
- 3. Weather-Stripping: Provide continuous weather-stripping at top and sides of exterior doors.
- 4. Fire Rated Gaskets: Provide continuous fire rated gaskets at top and sides of fire rated doors per ANSI A156.22.
- 5. Kick Plates: Height indicated by 1" less than door width; minimum 0.050" thick.
- 6. Pulls: Provide with bolts to secure from opposite door face; provide with pull plates unless otherwise indicated.

2.2 ACCESSORIES

- A. General: Provide complete hardware with accessories as required for doors and applications indicated.
- B. Templates: Furnish templates or physical hardware items to manufacturers concerned sufficiently in advance to avoid delay in Work.
- C. Reinforcing Units: Furnished by door manufacturer, coordinated by hardware manufacturer.
- D. Fasteners: Furnish as recommended by manufacturer and as required to install secure hardware.
 - 1. Finish: Match hardware.
 - 2. Furnish screws for items applied on gypsum board sufficiently long to provide solid connection to framing or backing
- E. Through Bolts: Through bolts and grommet nuts shall be avoided on door faces in highly visible areas, unless no alternative is possible, as directed and approved, and shall not be used for solid wood core doors.
- F. Electrical and Mechanical: Make provisions and coordinate requirements for mechanical and electrical devices in connection with hardware.

2.3 FINISHES

- A. Finish: BHMA 613 (US10B), oil rubbed satin bronze.
- B. Finish: Match school district standard
- C. Closers: Metal cover finished to match door-operating hardware.
- D. Other Items: Provide manufacturer's standard finishes matching similar hardware types on same door, and maintain acceptable finish considering anticipated use.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install finish hardware specified under this section; coordinate with manufacturer and installation of doors and frames.

- B. Fit hardware prior to painting. Remove for painting of doors and frames before final installation of hardware.
- C. Install hardware in accordance with manufacturer's instructions.
- D. No extra cost will be allowed because of changes or corrections necessary to facilitate installation of hardware.

3.2 MOUNTING POSITIONS

- A. Heights given are center line heights from finished floor.
 1. Locks and Latches: 38" to center of lever.
 2. Door Pulls: 42" to center of grip.
 3. Push Plate: 42"; coordinate with pull location.
 4. Push-Pull Bar: 42" to center of bar.
 5. Top Hinge: To jamb manufacturer's standard, but not greater than 10" from head of frame to center line of hinge.
 6. Bottom Hinge: To jamb manufacturer's standard, but not greater than 12-1/2" from floor to center line of hinge.
 7. Intermediate Hinges: Equally spaced between top and bottom hinges and from each other.
 8. Hinge Mortise on Door Leaf: 1/4" to 5/16" from stop side of door.
 9. Dead Bolt: Not more than 44" from floor to operating lever.
- B. Comply with recommendations of Builders Hardware Manufacturers Association, subject to approval, for heights of items not indicated.

3.3 ADJUSTING

- A. Qualified hardware supplier's or manufacturer's representatives shall inspect installation and make adjustments.
 1. Adjust closers, locks, and critical operational hardware.
 2. Deliver instructions for maintenance and future adjustments to Owner's Representative.

3.4 HARDWARE SCHEDULE

- A. The Hardware Schedule establishes a type and standard of quality.
- B. Examine Drawings and Specifications and furnish proper hardware for door openings, whether listed or not.
- C. Bring omissions to attention of Architect prior to bid opening for instructions; otherwise, list will be considered complete; no extras will be allowed.
- D. Manufacturers:

PRODUCT	SPECIFIED MANUFACTURER	APPROVED SUBSTITUTE
HINGES	STANLEY	McKINNEY
PIVOTS	STANLEY	McKINNEY
LOCKSETS	SCHLAGE	NONE
CYLINDERS	SCHLAGE	NONE
EXIT DEVICES	VON DUPRIN	NONE
FLUSHBOLTS	IVES	TRIMCO
COORDINATORS	TRIMCO	NONE

KICKPLATES	TRIMCO	NONE
WALL/FLOORSTOPS	IVES	TRIMCO
OVERHEAD STOPS	GLYNN-JOHNSON	DCI
THRESHOLDS	PEMKO	ZERO
DOOR SWEEPS	PEMKO	ZERO
PULLS	TRIMCO	NONE
CLOSERS	LCN	NONE
SLIDING DOOR HDWE	HENDERSON	NONE
KNOX BOX	KNOX	NONE
PADLOCK	BEST	NONE

E. Hardware Groups: See Sheet A710

11B-404.2.7 Door and gate hardware. Handles, pulls, latches, locks, and other operable parts on doors and gates shall comply with Section 11B-309.4. Operable parts of such hardware shall be 34 inches (864 mm) minimum and 44 inches (1118 mm) maximum above the finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.

Exceptions:

- Existing locks shall be permitted in any location at existing glazed doors without stiles, existing overhead rolling doors or grilles, and similar existing doors or grilles that are designed with locks that are activated only at the top or bottom rail.
- Access gates in barrier walls and fences protecting pools, spas, and hot tubs shall be permitted to have operable parts of the release of latch on self-latching devices at 54 inches (1372 mm) maximum above the finish floor or ground provided the self-latching devices are not also self-locking devices and operated by means of a key, electronic opener, or integral combination lock.

11B-404.2.8 Closing speed. Door and gate closing speed shall comply with Section 11B-404.2.8.

11B-404.2.8.1 Door closers and gate closers. Door closers and gate closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to a position of 12 degrees from the latch is 5 seconds minimum.

11B-404.2.8.2 Spring hinges. Door and gate spring hinges shall be adjusted so that from the open position of 70 degrees, the door or gate shall move to the closed position in 1.5 seconds minimum.

11B-404.2.9 Door and gate opening force. The force for pushing or pulling open a door or gate other than fire doors shall be as follows:

- Interior hinged doors and gates: 5 pounds (22.2 N) maximum.
- Sliding or folding doors: 5 pounds (22.2 N) maximum.
- Required fire doors: the minimum opening force allowable by the appropriate administrative authority, not to exceed 15 pounds (66.7 N).
- Exterior hinged doors: 5 pounds (22.2 N) maximum.

These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door or gate in a closed position.

Exception:

Exterior doors to machinery spaces including, but not limited to, elevator pits or elevator penthouses; mechanical, electrical or communications equipment rooms; piping or equipment catwalks; electric substations and transformer vaults; and highway and tunnel utility facilities.

When, at a single location, one of every eight exterior door leafs, or fraction of eight, is a powered door, other exterior doors at the same location, serving the same interior space, may have a maximum opening force of 8.5 pounds (37.8 N). The powered leaf(s) shall be located closest to the accessible route.

a. Powered doors shall comply with Section 11B-404.3. Powered doors shall be fully automatic doors complying with Builders Hardware Manufacturers' Association (BHMA) A156.10 or low energy operated doors complying with BHMA A156.19.

b. Powered doors serving a building or facility with an occupancy of 150 or more shall be provided with a back-up battery or back-up generator. The back-up power source shall be able to cycle the door a minimum of 100 cycles.

c. Powered doors shall be controlled on both the interior and exterior sides of the doors by sensing devices, push plates, vertical actuation bars or other similar operating devices complying with Sections 11B-304, 11B-305 and 11B-308.

At each location where push plates are provided there shall be two push plates; the centerline of one push plate shall be 7 inches (178 mm) minimum and 8 inches (203 mm) maximum above the floor or ground surface and the centerline of the second push plate shall be 30 inches (762 mm) minimum and 44 inches (1118 mm) maximum above the floor or ground surface. Each push plate shall be a minimum of 4 inches (102 mm) diameter or a minimum of 4 inches by 4 inches (102 mm by 102 mm) square and shall display the International Symbol of Accessibility complying with Section 11B-703.7.

At each location where vertical actuation bars are provided the operable portion shall be located so the bottom is 5 inches (127 mm) maximum above the floor or ground surface and the top is 35 inches (889 mm) minimum above the floor or ground surface. The operable portion of each vertical actuation bar shall be a minimum of 2 inches (51 mm) wide and shall display the International Symbol of Accessibility complying with Section 11B-703.7.

Where push plates, vertical actuation bars or other similar operating devices are provided, they shall be placed in a conspicuous location. A level and clear floor or ground space for forward or parallel approach complying with Section 11B-305 shall be provided, centered on the operating device. Doors shall not swing into the required clear floor or ground space.

d. Signage identifying the accessible entrance required by Section 11B-216.6 shall be placed on, or immediately adjacent to, each powered door. Signage shall be provided in compliance with BHMA A156.10 or BHMA A156.19, as applicable.

e. In addition to the requirements of Item d, where a powered door is provided in buildings or facilities containing assembly occupancies of 300 or more, a sign displaying the International Symbol of Accessibility measuring 6 inches by 6 inches (152 mm by 152 mm), complying with Section 11B-703.7, shall be provided above the door on both the interior and exterior sides of each powered door.

11B-404.2.10 Door and gate surfaces. Swinging door and gate surfaces within 10 inches (254mm) of the finish floor or ground measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within $\frac{1}{16}$ inch (1.6 mm) of the same plane as the other and be free of sharp or abrasive edges. Cavities created by added kick plates shall be capped.

Exceptions:

1. Sliding doors shall not be required to comply with Section 11B-404.2.10.
2. Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at 60 degrees minimum from the horizontal shall not be required to meet the 10 inch (254 mm) bottom smooth surface height requirement.
3. Doors and gates that do not extend to within 10 inches (254 mm) of the finish floor or ground shall not be required to comply with Section 11B-404.2.10.

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide gypsum board systems including gypsum board, joint treatment, acoustical accessories, and general accessories for complete installation.

1.2 REFERENCES

- A. ASTM C754: Installation of Steel Framing Members to Receive Screw-Attached Gypsum Wallboard, Backing Board, or Water-Resistant Backing Board.
- B. ASTM C840: Application and Finishing of Gypsum Board.

1.3 SYSTEM DESCRIPTION

- A. Performance Requirements: Perform gypsum board systems work in accordance with recommendations of ASTM C754 and ASTM C840 unless otherwise specified.
1. Loads: Comply with California Building Code requirements for design of metal framing for gypsum board systems.
- a. Deflection: Maximum L/240 typical, L/360 where plaster or tile is indicated.
2. Seismic Requirements: Comply with code requirements for seismic bracing.
- B. Fire-Rated Assemblies: Listed by Underwriter's Laboratory (UL), Gypsum Association (GA) File No's in 2006 Fire Resistance Design Manual, California Building Code Table 721.1 or other listing approved by applicable authorities.
- C. Systems Responsibility: Provide products manufactured by or recommended by manufacturer of gypsum board to maintain single-source responsibility for system.
- D. Openings: Obtain dimensions and locations from other trades and provide openings and enclosures for accessories, specialties, equipment, and ductwork.

1.4 SUBMITTALS

All submittals shall be made under the provisions of Section 01 33 00.

- A. Submittal No. 09 21 16A – Product Data
1. Provide product data on metal framing, gypsum board, joint tape, and decorative finish.
2. Furnish manufacturer's certification indicating products comply with Contract Documents and applicable codes.
- B. Submittal No. 09 21 16B – Not required.
- C. Submittal No. 09 21 16C – Not required.

1.5 PROJECT CONDITIONS

**SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES**

- A. Do not begin installation of interior gypsum board until space is enclosed, space is not exposed to other sources of water, and space is free of standing water.
- B. Maintain areas to receive gypsum board at minimum 50 degree F for 48 hours prior to application and continuously after application until drying of joint compound is complete; comply with ASTM C840.
- C. Immediately remove from site gypsum board for interior use exposed to water, including gypsum board with water stains, with signs of mold, and gypsum board with mildew.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. United States Gypsum Co., USG Corp.
- B. Georgia-Pacific Corp.
- C. National Gypsum Co.
- D. Substitutions: Refer to Section 01 62 00.

2.2 MATERIALS

- A. Gypsum Board - Standard
 - 1. ASTM C1396, TYPE X, FIRE RATED, 5/8" thick paper faced gypsum panels with tapered edges.
- B. Moisture Resistant Gypsum Board
 - 1. Equal to Georgia Pacific Corp. "Dens-Armor Plus High Performance" 5/8" thick fiberglass faced, treated gypsum panels with tapered edges. Fire rated Type X.
- C. Acoustic Gypsum Board
 - 1. Equal to Serious Energy "Quiet Rock, ES" mold resistant, 5/8" thick double layer acoustic gypsum board panels. Fire rated Type X.
- D. Mold Resistant Gypsum Board - Restrooms
 - 1. Sheetrock Mold Tough AR gypsum panels with noncombustible, moisture resistant gypsum core encased in moisture and mold resistant, 100 percent recycled green face and brown back paper.
 - a. Provide in 5/8" Firecode Type 'X' core formulation
- E. Tile backer board specified under Section 09 30 00.
- F. Gypsum Board Accessories: Comply with ASTM C840.
 - 1. Gypsum board sealer: Provide one Coat "Hamilton Prep Coat Plus" prior to application of gypsum board texture.
 - 2. Provide protective coated steel corner beads and edge trim; type designed to be concealed in finished construction by tape and joint compound.
 - 3. Corner Beads: Manufacturer's standard metal beads.
 - 4. Edge Trim: "J", "L", "LK", or "LC" casing beads – manufacturer's standard.
 - 5. Reinforcing Tape, Joint Compound, Adhesive, Water, Fasteners: Types

**SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES**

- recommended by system manufacturer and conforming to ASTM C475.
- a. Typical Joint Compound: Chemical hardening type for bedding and filling, ready-mixed or powder vinyl type for topping.
 6. Control Joints: Back to back casing beads.
 - a. Back control joints with 4 mil thick polyethylene air seal.
- G. Gypsum Board Texture: Equal to USG "Sheetrock Brand" ready mixed wall and ceiling spray texture.

2.3 ACOUSTIC SEALANT: SERIOUS ENERGY "QUIET SEAL PRO", NON-HARDENING, GUN GRADE SEALANT PER ASTM C834.

PART 3 EXECUTION

- A. Gypsum Board Installation: Install in accordance with ASTM C840 and manufacturer's recommendations.
 1. Use screws when fastening gypsum board to furring and to framing.
 2. Erect gypsum board with ends and edges occurring over firm bearing.
- a. Ensure joints of second layer do not occur over joints of first layer in double layer applications.
 3. For fire rated systems comply with requirements for fire ratings.
- a. Provide "five-sided" gypsum board boxes at all breaches in the envelope of fire rated wall or ceiling assemblies larger than 16 square inches. Some items causing this condition may be electrical receptacles or switches, recessed lights, fire extinguishers, medical gas outlets, equipment panels, recessed film illuminators, etc.
 4. Place control joints to be consistent with lines of building spaces and as directed by Architect.
- a. Provide where system abuts structural elements.
- b. Provide at dissimilar materials.
- c. Lengths exceeding 30'-0" in partitions.
- d. Ceiling areas exceeding 50'-0" or 2500 square feet.
- e. Wings of "L", "U" and "T" shaped ceilings.
 5. Place corner beads at external corners; use longest practical lengths.
 6. Place edge trim where gypsum board abuts dissimilar materials.
 7. Tape, fill, and sand exposed joints, edges, corners and openings to produce surface ready to receive finishes; feather coats onto adjoining surfaces.
 8. Finishing: Comply with Gypsum Association (GA) "Levels of Gypsum Board Finish".
- a. GA Level 4 (Typical): Provide three coat finishing and sanding is required for surfaces indicated to be painted; provide flush, smooth joints and surfaces ready for applied paint finishes.
 - b. Texture:
 - 1) At walls to be painted – provide light orange peel spray texture.
 - 2) Under fabric wall covering – tape and sand only.
 9. Remove and replace defective work.

END OF SECTION

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PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide ceramic, quarry, stone, and porcelain tile installations with accessories, as required for complete installation.
 - 1. Provide cementitious backer unit tile substrate.
 - 2. Provide epoxy thin set tile walls.
 - 3. Provide ceramic tile floor and base finish using the full bed application method.

1.2 REFERENCES

- A. ANSI A108.5: Installation of Tile with Latex-Portland Cement Mortar.
- B. ANSI A108.6: Installation of Tile with Chemical Resistant Water Cleanable Tile Setting and Grouting Epoxy.
- C. ANSI A108.10: Installation of Grout in Tilework.
- D. ANSI A108.11: Interior Installation of Cementitious Backer Units.
- E. Tile Council of North America (TCNA): Handbook for Ceramic Tile Installation.

1.3 SUBMITTALS

All submittals shall be made under the provisions of Section 01 33 00.

- A. Submittal No. 09 30 00A – Product Data: Submit product data indicating material specifications, characteristics, instructions for using adhesives and grouts and maintenance data.
- B. Submittal No. 09 30 00B – Shop Drawings: Not required.
- C. Submittal No. 09 30 00C – Samples for Verification: Submit minimum six sets of manufacturer's standard samples for selection of colors and patterns.
- D. Mock up: Provide for approval, sample panels of each tile pattern in areas designated by the Architect. If acceptable, these may remain part of the final construction.

1.4 QUALITY ASSURANCE

- A. Installer to have 5 years of experience and successfully completed 10 previous projects of similar scope, references to be provided at Architects request.
- B. Pre-installation conference to be held one week prior to commencing work of this Section.

1.5 PROJECT CONDITIONS

- A. Provide sufficient heat and ventilation in areas where ceramic tile work is being performed, so as to allow tile to properly set. Take precautionary measures necessary to ensure excessive temperature changes do not occur.

1.6 WARRANTY

- A. Special Warranty: Provide for correcting failures of waterproofing to resist water penetration, except where failures are result of structural failures of building. Hairline cracking of concrete due to temperature or shrinkage is not considered structural failure.
1. Repair and pay for or replace damaged materials and surfaces.
 2. Special Warranty Period: Two years.

PART 2 PRODUCTS**2.1 FLOOR MATERIALS**

- A. Tile: Mosaic Porcelain tile in types and styles indicated.
1. Manufacturers:
 - a. Dal-Tile Corp.
 - b. Substitutions: Refer to Section 01 62 00.
 2. Floor Tile: Provide non-slip units with minimum wet and dry value 0.42 coefficient of friction when tested in accordance with ANSI A137.1-2012 DCOF Acutest.
 3. Base and Trim: Provide matching trim pieces, coordinated with sizes and coursing of adjoining flat tile as directed by Architect; types as indicated, as selected by Architect where not indicated.
 4. Mosaic Porcelain Floor Tile: ANSI/TCNA A137.1, conforming to the following:
 - a. Product: Daltile, Museo; Artistic Grey MU-31
 - b. Moisture Absorption: 0.5 to 3.0 percent maximum.
 - c. Size: 2 x 3 x 3/8" inch
 - d. Edge: Cushioned
 - e. Surface Finish: Non-slip
 - f. Base: See wall tile
 - g. Coefficient of Friction (COF): 0.42 or higher for level surfaces and 0.8 for ramps.
- B. Thin Set: Epoxy thinset bond coat, consisting of latex-cementitious mortar conforming to ANSI A118.4.
1. Manufacturers:
 - a. Equal to Laticrete International Inc., "Latapoxy 210 adhesive".
 - b. Substitutions: Refer to Section 01 62 00.
- C. Epoxy Cement Grout: ANSI A118.7, epoxy cementitious type, uniform in color, resistant to shrinkage.
1. Product: Architect to select mfr. & grout color.
- D. Waterproof Membrane at Shower Areas (Unless otherwise noted): Manufacturer's standard liquid rubber polymer designed specifically for application under tile in non-immersed applications.
1. Manufacturers:
 - a. Laticrete International Inc. 9235 Waterproof Membrane.
 - b. Substitutions: Refer to Section 01 62 00.
- E. Mortar
1. Manufacturers:
 - a. Equal to Laticrete #226 Thick Bed Mortar.
 - b. Substitutions: Refer to Section 01 62 00.
- F. Reinforcing Mesh: 2" x 2" x 16/16 gauge welded wire mesh (ASTM A82 &

A185).

- G. Cleaning and Sealing Materials: As recommended by tile and grout manufacturers, such as Bostik Construction Products/Hydroment CeramaSeal.
- H. Floor Sealer (Under Epoxy Set Floors): Curing hardener sealer vapor retarder to prevent bond failure of flooring systems such as Creteseal (800-278-4273) CS2000.

2.2 WALL MATERIALS

- A. Tile: Ceramic tile in types and styles indicated.
 - 1. Manufacturers:
 - a. Dal-Tile Corp.
 - b. Substitutions: Refer to Section 01 62 00.
 - 2. Color, Style and Pattern: as indicated by Architect on finish schedule and conforming to Architect approved samples.
 - 3. Wall Tile: Smooth surfaced glazed wall tile – ANSI/TCNA A137.1 conforming to the following:
 - a. Moisture Absorption: Less than 20%.
 - b. Size: as indicated on finish schedule.
 - c. Edge: Cushioned.
 - d. Surface Finish: Matte or Semi-gloss.
 - e. Color: As selected by Architect on Finish Schedule.
 - f. Base: Coved bottom
 - g. Top row of wainscot: bullnose top.
 - h. Product: Daltile, Semi-gloss/Matte.
 - B. Latex Thin Set: Thinset bond coat, consisting of latex-cementitious mortar conforming to ANSI A118.4.
 - 1. Manufacturers:
 - a. Equal to Laticrete International Inc., "15 Premium Mastic".
 - b. Substitutions: Refer to Section 01 62 00.
 - C. Wall Grout: Epoxy Grout - ANSI A118.7, epoxy type, uniform in color, resistant to shrinkage.
 - 1. Manufacturers:
 - a. Laticrete International Inc., "SpectralOCK PRO Grout".
 - b. Substitutions: Refer to Section 01 62 00.
 - 2. Color: As selected by Architect from manufacturer's standard colors.
 - D. Tile Backer Units: Water-resistant treated core with woven glass-fiber mesh on both faces; approximately 1/2" or 5/8" thick; UL fire rated as required to maintain integrity of fire rated assemblies.
 - 1. Manufacturers:
 - a. Georgia-Pacific, DensShield Tile Backer.
 - b. Substitutions: Refer to Section 01 62 00.
 - E. Cleaning and Sealing Materials: As recommended by tile and grout manufacturers, such as Bostik Construction Products/Hydroment CeramaSeal.

2.3 MIXES

- A. Mix and proportion cementitious materials for site-made leveling coats, setting beds and grout as recommended by the TCNA Handbook for Ceramic Tile

Installation.

- B. Mix and proportion pre-mixed setting beds and grout materials in accordance with manufacturer's recommendations.

PART 3 EXECUTION

3.1 PREPARATION

- A. Prior to installing tile, ensure surfaces are level.
 - 1. Thin Set Tile Tolerance: Maximum surface variation of 1/8" in 10'-0".
- B. Ensure surfaces are clean and well cured.
- C. Do not commence work until surface conditions are within tolerances required for proper installation; apply latex leveling material where necessary to meet required tolerances.
- D. Waterproof Membrane: Install waterproof membrane at tile areas located above grade, in accordance with manufacturer's recommendations; extend membrane minimum 6" up walls.
 - 1. Comply with waterproof membrane manufacturer recommendations for installation of tile over waterproof membrane.
- E. Cementitious Backer Units: Install units in accordance with ANSI A108.11, manufacturer's recommendations, and as required to provide fire ratings indicated on Drawings.
- F. Floor Sealer: Apply vapor retarding floor sealer on concrete floors indicated to receive epoxy set tile in accordance with manufacturer recommendations and installation instructions.

3.2 INSTALLATION

- A. Install tile in accordance with referenced ANSI Standards and TCA recommendations for type of substrate and indicated setting method.
 - 1. Floor – Cement Mortar Bed: TCNA F114.
 - 2. Latex-Cement Thin Set Wall Tile over Cementitious Backer Units: TCNA W244.
- B. Place tile in accordance with patterns indicated on Drawings or as directed by Architect; carefully plan tile layouts, ensure pattern is uninterrupted from one surface to the next and through doorways.
 - 1. Apply latex thin set to back of tile where necessary to ensure 100% bond between bond coat and substrate; replace tiles which break due to voids between tile and substrate.
- C. Neatly cut tile around fixtures and drains; accurately form corners, base, intersections and returns.
 - 1. Base, Coves: Flush cove type with base grout joint on wall, cove tile on floor, unless otherwise indicated.
 - 2. Corners and Edges: Bullnose tile unless otherwise indicated.
- D. Locate expansion joints, control joints, contraction joints, and isolation joints where indicated; where not indicated, provide as recommended by TCNA

- Handbook and as approved by Architect.
1. Install special trim pieces as indicated on Drawings and in accordance with manufacturer recommendations and installation instructions, true to lines and levels indicated and in correct relationship with tile and adjacent materials.
 - E. Ensure tile joints are uniform in width, subject to normal variance in tolerance allowed in tile size; ensure joints are watertight, without voids, cracks, excess mortar or grout.
 - F. Sound tile after setting, remove and replace hollow sounding units.
 - G. Allow tile to set for a minimum 48 hours prior to grouting.
 - H. Grout tile to comply with recommendations of TCNA and as specified.
 - I. Leave completed installation free of broken, damaged and faulty tile.

3.3 CLEANING AND SEALING

- A. Clean tile surfaces free of foreign matter upon completion of grouting.
- B. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
- C. Prohibit foot and wheel traffic from tiled floors for at least 7-days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.
- E. Seal tile and grout surfaces where recommended by manufacturer for materials and applications involved; comply with manufacturer's recommendations.

END OF SECTION

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PART 1 GENERAL**1.1 SECTION INCLUDES**

- A. Entrance Carpet Tiles.
- B. Accessories.
- C. Concrete Sealer

1.2 REFERENCES

- A. ANSI/ASTM E648 - Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- B. ASTM E84 - Surface Burning Characteristics of Building Materials.
- C. FS DDD-C-0095 - Carpet and Rugs, Wool, Nylon, Acrylic, Modacrylic, Polyester, Polypropylene.

1.3 SUBMITTALS

All submittals shall be made under the provisions of Section 01 33 00.

- A. Submittal No. 09 68 13A – Product Data: Provide product data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- B. Submittal No. 09 68 13B – Shop Drawings: Indicate carpet tile pattern
- C. Submittal No. 09 68 13C – Samples: Submit two samples 12 x 12 inch in size illustrating color and pattern for each carpet material specified.

1.4 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in carpet with five years minimum experience.
- B. Installer: Company with five years minimum documented experience approved by manufacturer.

1.5 REGULATORY REQUIREMENTS

- A. Conform to ANSI/ASTM E648.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain minimum 70 degrees F ambient temperature three days prior to, during, and 24 hours after installation of materials.

1.7 EXTRA MATERIALS

- A. Provide 5% or 10 tiles of carpeting of each color and type specified, whichever is greater.

PART 2 PRODUCTS**2.1 MANUFACTURERS**

- A. Tarkett
- B. Substitutions: Under provisions of Section 01 62 00 - Must be approved prior to bidding.

2.2 MATERIALS

- A. "Aggregate #11016" collection, color #28302 "Native Asphalt" as manufactured by Tarkett (800-248-2878)

Construction	Tufted
Size	24" x 24"
Fiber	Aquafil ECONYL® Nylon
Gauge	5/64"
Dye Method	Solution Dyed
Total thickness	0.195"

- A. "Native Flora #11602" collection, color #62903 "Golden Sand" as manufactured by Tarkett (800-248-2878)

Construction	Tufted
Size	24" x 24"
Fiber	Dynex SD® Nylon
Gauge	5/64"
Dye Method	Solution Dyed
Total thickness	0.140"

2.3 ACCESSORIES

- A. Sub-Floor Filler: White premix latex; type recommended by carpet manufacturer.
- B. Primers and Adhesives: NuSprayLok as manufactured by Mohawk Commercial.
- C. Edge Strips: FlexCo. No. 163 with No. 101 track.

2.4 CONCRETE SEALER

- A. Concrete Sealer:
1. Primer: Mapei "WE" primer.
 2. Base Coat: Mapei "Planiseal EMB".
 3. Patch: Mapei "Planipatch" with "Planipatch Plus".

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that substrate surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft and are ready to receive work.
- B. Verify concrete floors are dry to a maximum moisture content of 7 percent; and exhibit negative alkalinity, carbonization, or dusting.
- C. Beginning of installation means acceptance of existing substrate and site conditions.

3.2 PREPARATION

- A. Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes, and other defects with sub-floor filler.
- B. Apply, trowel, and float filler to leave smooth, flat, hard surface.
- C. Prohibit traffic until filler is cured.
- D. Vacuum floor surface.

3.3 INSTALLATION - CONCRETE SEALER

- A. Prime all surfaces with MAPEI "WE" primer per MAPEI recommendations.
- B. Coat all concrete slab surfaces with "Planiseal EMB" sealer. Coverage rates to be per factory recommendations.
- C. Over slab sealer apply first coat of Planipatch/Planipatch Plus skim coat diluted at a 1:1 ratio.
- D. Finish floor slab with final coat of Planipatch/Planipatch Plus diluted at a 1:3 ratio.

3.4 INSTALLATION – ENTRY CARPET

- A. Install using quarter turned method.
- B. Apply carpet and adhesive in accordance with manufacturers' instructions. M-1609V
- C. Lay out carpet tiles for approval.
- D. Verify carpet tiles match before cutting to ensure minimal variation between dye lots.
- E. Locate change of color or pattern between rooms under door centerline.
- F. Cut and fit carpet tiles around interruptions.
- G. Fit carpet tight to intersection with vertical surfaces without gaps.

3.5 CLEANING

**SECTION 09 68 13
TILE CARPETING**

- A. Remove access adhesive from floor, base, and wall surfaces without damage.
- B. Clean and vacuum carpet surfaces.

3.6 PROTECTION

- A. Prohibit traffic from carpet areas for 24 hours after installation.

END OF SECTION

PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes:
1. Provide painting and finishing of exposed items and surfaces.
 - a. Specified surface preparation, priming and coats of paint are in addition to shop-priming and surface treatment specified under other sections of work.
 - b. Painting and finishing includes field finishing of select shop finished items where indicated as required to match adjacent surfaces, such as mechanical grilles and registers.
 - c. Field paint exposed bare and covered pipes, ducts, and hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under mechanical and electrical work in occupied spaces.
- B. Surfaces To Be Painted:
1. All exposed interior and exterior surfaces are to be painted unless listed under "Surfaces Not To Be Painted" and/or unless clearly indicated otherwise.
- C. Surfaces Not To Be Painted:
1. Finished items including finished metal surfaces.
 2. Walls and ceilings in concealed areas and generally inaccessible areas.
 3. Moving parts of operating mechanical and electrical units.
 4. Labels: Keep equipment identification and fire rating labels free of paint.
 5. Plastic smoke stops and weather-stripping at doors.

1.2 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

- A. Submittal No. 09 90 00A – Product Data and MSDS:
1. Submit product data on all finishing products.
 2. Submit manufacturer's application instructions.
 3. Submit MSDS on all finishing products.
- B. Submittal No. 09 90 00B – Shop Drawings: Not Required
- C. Submittal No. 09 90 00C – Samples:
1. Samples for Selection: Submit a complete set of color chips that represent the full range of manufactures color samples available.
 2. Samples for Verification: Submit three samples 8-1/2 x 11 inch in size illustrating color, texture and sheen for each surface-finishing product selected.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: All products shall comply with the California Green Building Code. No products containing VOCs shall be permitted.
- B. Provide manufacturers 5 year written performance guarantee for elastomeric paint and application error (materials and labor).
- C. Conform to California Building Code for flame/fuel/smoke rating requirements for finishes.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, with:
 - 1. Name of material, color and sheen.
 - 2. Manufacturer's name, stock number and date of manufacture.
 - 3. Contents by volume, for major pigment and vehicle constituents.
 - 4. Thinning and application instructions.
 - 5. Color number
 - 6. VOC content

1.5 SITE CONDITIONS

- A. Apply water-base paints when temperature of surfaces and surrounding air are between 50 and 90 degrees F.
- B. Apply solvent-thinned paints when temperature of surfaces and surrounding air are between 45 and 95 degrees F.
- C. Do not apply paint in rain, fog or mist; or when relative humidity exceeds 85 percent; or to damp or wet surfaces.
- D. Painting may be continued during inclement weather if areas to be painted are enclosed and heated within temperature limits specified.

1.6 EXTRA STOCK

- A. Provide a one gallon container of each paint to Owner.
- B. Label each container with color, color number, texture, and room locations, in addition to the manufacture's label.

PART 2 PRODUCTS**2.1 MANUFACTURERS**

- A. Benjamin Moore & Co.
- B. Sherwin-Williams Co.
- C. P.P.G. Industries, Inc., Coatings and Resins Division.
- D. Dunn-Edwards Corp.
- E. Glidden Professional.
- F. Kelly Moore Paint Co.
- G. Frazee Paint Co.
- H. Substitutions: Refer to Section 01 62 00.

2.2 MATERIALS

**SECTION 09 90 00
PAINTING AND COATING**

- A. Definition: "Paint" as used herein means coating systems including primers, emulsions, enamels, stains, sealers and fillers, whether used as prime, intermediate or finish coats.
- B. General: Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.
- C. Material Quality: Provide top line quality commercial grade (professional painter) paints; materials not bearing manufacturer's identification as a best-grade product shall not be acceptable.
 - 1. Primers: Provide premium grade primers recommended by paint manufacturer for substrates indicated and for finish systems specified.
 - 2. Undercoats and Barrier Coats: Provide undercoat paints produced by same manufacturer as finish coats; use only thinners approved by paint manufacturer, and use only within recommended limits.
 - 3. Finish Coats: Provide finish coats capable of being washed with mild detergent without loss of color, sheen, or pigments.
 - a. Color pigments: Pure, non-fading, Zero VOC, applicable types to suit substrates and service indicated; no lead content permitted.
 - 4. Finish Coat Coordination: Provide finish coats that are compatible with prime paints, undercoats, and barrier coats used.
 - a. Review other Specification sections in which prime paints are provided; ensure compatibility of total coatings systems.
 - b. Upon request from other trades furnish information on characteristics of finish materials proposed for use.
 - c. Provide barrier coats over incompatible primers or remove and prime as required.
 - d. Notify Architect in writing of any anticipated problems in use of specified coating systems with substrates primed by others.
- D. Colors and Finishes: Prior to commencement of painting work, Architect will provide a color selection for surfaces to be painted.
 - 1. Use of proprietary names in color selection is not intended to imply exclusion of equivalent products of other manufacturers.
 - 2. Final acceptance of colors will be from samples applied on site.

PART 3 EXECUTION

3.1 PREPARATION

- A. Inspection: Examine areas and conditions under which painting work is to be applied.
 - 1. Start of painting work indicates acceptance of surfaces and conditions of surfaces and conditions within any particular area.
 - 2. Where exposed items or surfaces are not specifically mentioned in Schedules, paint same as adjacent similar materials or areas.
 - 3. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to a durable paint film.
- B. Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as specified for substrate condition.
- C. Correct minor defects and clean surfaces which affect work of this Section.

**SECTION 09 90 00
PAINTING AND COATING**

- D. Remove hardware, accessories, and items in place and not to be painted, or provide protection prior to surface preparation and painting; after painting reinstall removed items.
- E. Clean surfaces before applying paint; remove oil and grease prior to mechanical cleaning; program cleaning so contaminants from cleaning process do not fall onto wet, newly painted surfaces.
- F. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.
- G. Cementitious Materials: Prepare by removing efflorescence, chalk, dirt, grease, oils, and by roughening as required to remove glaze.
 - 1. Determine alkalinity and moisture content of surfaces to be painted.
 - 2. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, neutralize before application of paint.
 - 3. Do not paint over surfaces where moisture content exceeds manufacturer's printed directions.
- H. Wood: Clean wood surfaces of dirt, oil, and other foreign substances; sandpaper smooth surfaces exposed to view, and dust off.
 - 1. Scrape and clean seasoned knots and apply thin coat of recommended knot sealer, before application of priming coat.
 - 2. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job; prime edges, ends, faces, undersides, and backsides of wood.
 - 3. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler; sandpaper smooth when dry.
- I. Ferrous Metals: Touch up shop-applied prime coats wherever damaged using same type of primer as applied in shop or barrier coat compatible with finish paint.
 - 1. Bare Surfaces: Clean surfaces that are not galvanized or shop-coated, of oil, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
 - 2. Galvanized Surfaces: Clean free of oil and surface contaminants, using non-petroleum based solvent; primer and touch-up primer to be zinc-rich primer.
- J. Store materials in tightly covered containers; maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- K. Stir materials before application to produce mixture of uniform density, and stir as required during application; do not stir surface film into material, if necessary, strain material before using.

3.2 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

3.3 APPLICATION

- A. Apply paint in accordance with manufacturer's directions; use applicators and techniques best suited for substrate and type of material being applied.
 - 1. Apply additional coats when stains or blemishes show through final coat, until paint is a uniform finish, color and appearance.
 - 2. Provide extra attention to assure dry film thickness at corners and crevices is equivalent to that of flat surfaces.
 - 3. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces; paint surfaces behind permanently-fixed equipment and furniture with prime coat only.
 - 4. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 - 5. Finish doors on tops, bottoms and side edges same as faces.
 - 6. Sand lightly between each succeeding enamel coat and each varnish coat.
- B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated or prepared for painting as soon as practicable after preparation.
 - 1. Allow time between successive coatings to permit proper drying.
 - 2. Do not recoat until paint feels firm and does not deform or feel sticky under moderate thumb pressure.
- C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as recommended by coating manufacturer.
- D. Prime Coats: Apply to all surfaces, even if item has shop primed surface; recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat.
- E. Finish Coats: Provide even texture; leave no laps, irregularity in texture, skid marks, or other surface imperfections.
 - 1. Opaque Finishes: Provide opaque, uniform finish, color and coverage; cloudiness, spotting, holidays, brush marks, runs, sags, rope-i-ness, and other surface imperfections are not acceptable.
 - 2. Transparent and Stained Finishes: Produce glass smooth surface film of even luster; provide with no cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, and other surface imperfections.
- F. Completed Work: Match approved samples for color, texture and coverage; remove, refinish or repaint work not accepted.

3.4 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Paint all exposed equipment. Roof mounted equipment is to be painted to match roof color and exposed equipment at interior of building is to be painted to match ceiling color. Note pre-finished equipment is still to be painted.
- B. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- C. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, and accessories. Paint over prefinished equipment when exposed.

- D. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- E. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat back paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.
- F. Paint exposed conduit and electrical equipment occurring in finished areas.
- G. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.
- H. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.5 SCHEDULE - SURFACES TO BE PAINTED, INTERIOR

- A. Steel doors and frames.
- B. Gypsum board.
- C. Steel access ladders.
- D. Access doors.
- E. Exposed structural steel.
- F. Wood trim and wood beams.
- G. Metal ducts, supports and louvers.
- H. Exposed electrical conduit.
- I. Exposed pipes and supports.
- J. Light fixture supports and raceways.
- K. Exposed Mechanical Equipment.
- L. See paragraph 3.4.

3.6 COLOR SELECTION

- A. Specific colors shall be selected by Architect after award of contract.
- B. Minimum color selections shall be as follows:
 - 1. Exterior metal doors: all one color.
 - 2. Exterior metal door frames: all one color.
 - 3. Misc. Iron, mechanical, electrical and other accessories: all one color.
 - 4. Interior door frames: all one color.
 - 5. Interior doors: all one color.
 - 6. Interior walls: one color per room, typical.
 - 7. Interior ceilings: one color (per room), typical.
 - 8. Misc. Accessories: black or wall color

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PAINTING AND COATING**

9. Downspouts/Rainwater leaders: match adjacent surfaces.
10. Misc. Flashings: one color
11. Roof mounted equipment, fans, flues, vent pipes: match roof color – one color.
12. Exposed ducts/Mechanical Equipment etc.: one color
13. Miscellaneous structural steel: one color.
14. Fiber cement siding: one color
15. Wood: one color
16. Pipe and guardrails: one color
17. Plywood: one color
18. Wood trim: one color for painted.
19. Wood trim: one color for stained.
20. Mechanical enclosures: one color
21. Concrete (below siding/plaster): one color

3.7 CLEAN-UP, PROTECTION, AND REPAIR

- A. Clean-Up: During progress of work, remove discarded paint materials, rubbish, cans and rags from site at end of each work day.
 1. Clean glass and paint-spattered surfaces immediately by proper methods of washing and scraping, using care not to scratch or damage finished surfaces.
- B. Protection: Protect work of other trades, whether to be painted or not; correct damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.
 1. Provide "Wet Paint" signs to protect newly-painted finishes.
 2. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.
- C. Repair: At completion of work of other trades, touch-up and restore damaged surfaces or defaced painted surfaces following manufacturer's recommendations for touch up and repair. Repair any defects that will hinder the performance of the coatings.

END OF SECTION

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PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide general signage as indicated complete with attachment devices and accessories as required for complete installation.

1.2 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

- A. Submittal No. 10 14 00A - Product Data: Furnish manufacturer's literature and indicate each sign type, style, color, and method of attachment.
- B. Submittal No. 10 14 00B - Shop Drawings: Furnish listing of sign types, lettering and locations, along with overall dimension of each sign.
 - 1. Computerized Output: Furnish computerized samples of applied copy signs and graphics at full scale duplicating final appearance.
- C. Submittal No. 10 14 00C - Samples: Furnish full size samples where requested.

1.3 QUALITY ASSURANCE

- A. Access for Persons with Disabilities: Provide signs for assuring access for persons with disabilities in accordance with state and federal regulations.
 - 1. California Regulations: Comply with California Building Code.
 - 2. Federal Regulations: Comply with 2010 Americans with Disabilities Act Accessibility Standards (ADA-ABA). 28 CFR Part 36

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Package separately or in like groups of names, labeled as to names enclosed; include installation template, attachment system and installation instructions.

PART 2 PRODUCTS**2.1 MANUFACTURERS**

- A. ASI Sign Systems Inc.
- B. Mohawk Engraving Company, Incorporated.
- C. Best Sign Systems Inc.
- D. Cameo, California Metal Enameling Co.
- E. Vomar Products, Inc.
- F. Substitutions: Refer to Section 01 62 00.

2.2 MATERIALS

- A. CBC Toilet Room Signs: Provide colored plastic signs, conforming to 2022 CBC requirements for signs for toilet rooms, with inset symbols and characters; concealed mounting system.
 - 1. Total Thickness: 0.25".
 - 2. Provide signs required by California Code of Regulations Title 24.
 - a. Men's Room: 12" equilateral triangle, vertex pointing up.
 - b. Ladies' Room: 12" diameter circle.
 - c. Unisex Toilet: 12" diameter circle with equilateral triangle, vertex pointing up, inscribed in circle; circle and triangle each 0.25" thick.
 - 3. Colors: As selected to contrast with doors.
 - 4. Symbols: As selected from manufacturer's standard symbols.
 - 5. Adhesive: Type as recommended by sign manufacturer for type of substrate involved.

- B. ADAAG Toilet Room Signs: Provide colored plastic signs, conforming with ADAAG requirements for signs for permanent rooms, with inset symbols and with raised and Braille characters; concealed mounting system.
 - 1. Comply with ADAAG requirements for raised and Braille characters, pictorial symbols, finish, and contrasts requirements.
 - 2. Colors: As selected by Architect.

- C. Entry Decals: Provide minimum 6" square decals with international symbol of accessibility white on blue background with white border, applied to glass at accessible entry doors.

- D. Braille Door Signs: Provide colored plastic signs, conforming to 2022 CBC requirements for signs for permanent rooms, with raised and Braille characters; concealed mounting system.
 - 1. Colors: As selected by Architect.
 - 2. Size and Style: As indicated on Drawings.

- E. General Sign Requirements:
 - 1. Character Type: Characters on signs shall be raised 1/32 inch minimum and shall be sans serif uppercase characters accompanied by California Grade 2 Braille. See Note 5 below.
 - 2. Character Size: Raised characters shall be a minimum of 5/8 inch and a maximum of 2 inches high.
 - 3. Finish and Contrast: Characters, Symbols and their background shall contrast and have a non-glare finish, CBC Chapter 11B-703.5.1.
 - 4. Proportions: The uppercase letter "O" of characters shall be between 60% and 110% of the height of uppercase letter "I" and the stroke thickness of uppercase letter "I" shall be 15% max. of the height of the character, 11B-703.2.4, 11B-703.2.6.
 - 5. Braille: California Grade 2 Braille shall be used wherever Braille is required in other portions of these standards. Braille dimensions shall comply with 2022 CBC 11B-703.3.1.

PART 3 EXECUTION

3.1 INSTALLATION

- A. General: Install signs in accordance with manufacturer recommendations and installation instructions, free from distortions and defects.
- B. California Toilet Room Signs: Install signs on doors after doors are painted and

- finished.
1. Location: Mount signs centered at 60" above finished floor.
 2. Install centered and level, in line, in accordance with the manufacturer's recommendations.
 3. Clean and polish, remove excess adhesive.
- C. CBC Toilet Room Signs: Install signs on walls after surfaces on which they are to be mounted are painted and finished.
1. Location: Mount signs with base of Braille minimum 48" above finished floor and base of highest text maximum 60" above finish floor per 2022 CBC Section 11B-703.4.1.
 2. Install level, in line, in accordance with the manufacturer's recommendations and ADAAG requirements. Signs containing tactile characters shall be located so that a clear floor space of 18" x 18" min. centered on the tactile characters is provided beyond the arc of any door swing between the closed and 45 degree open position per 2022 CBC Section 11B-703.4.2.
 3. Clean and polish, remove excess adhesive.
- D. Entry Signs: Install in locations as approved by Architect.
- E. Stair Signs: Install signs inside stairwell after walls are finished, at locations immediately adjacent to door on strike side as required by referenced code, readily visible when door is open.
1. Height: Mount signs with base of Braille minimum 48" above finished floor and base of highest text maximum 60" above finish floor per CBC Section 11B-703.4.1.
- F. Tactile and Braille Exit Door Signs: Install at doors with lighted "EXIT" signs; apply after walls are finished.
1. Location: Mount signs 48" minimum above finished floor measured from baseline of lowest Braille cells and 60" maximum above finished floor measured from baseline of the highest line of raised characters on strike side of door
 2. Install level, in line, in accordance with the manufacturer's recommendations and CBC requirements. Signs containing tactile characters shall be located so that a clear floor space of 18" x 18" min. centered on the tactile characters is provided beyond the arc of any door swing between the closed and 45 degree open position per CBC Section 11B-703.4.2.
 3. Clean and polish, remove excess adhesive.

END OF SECTION

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PART 1 GENERAL**1.1 SUMMARY**

- A. Section Includes:
1. Provide toilet accessories with attachment hardware and rough-in frames as required for complete, operational installation.
 2. Provide accessories in toilet rooms, classrooms and other rooms as noted on the drawings and per schedule at the end of this Section.

1.2 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

- A. Submittal No. 10 28 13A – Product Data: Provide product data on accessories describing size, finish, details of function, attachment methods and blocking requirements and locations prior to wall framing. Submit manufacturer's installation instructions for all specified products.
- B. Submittal No. 10 28 13B – Shop Drawings: Not Required
- C. Submittal No. 10 28 13C – Samples: Not Required

1.3 QUALITY ASSURANCE

- A. Access for Persons with Disabilities: Comply with California Building Code and Americans with Disabilities Act Accessibility Guidelines (ADAAG).

1.4 DELIVERY, STORAGE AND HANDLING

- A. Deliver inserts and rough-in frames to jobsite at appropriate time for building in.
- B. Do not deliver accessories to site until rooms in which they are to be installed are ready to receive them.
- C. Pack accessories individually, protect each item and its finish.

1.5 PROJECT CONDITIONS

- A. Protect adjacent or adjoining finished surfaces from damage during installation of work of this section.
- B. Before starting work notify Architect in writing of conditions detrimental to installation or operation of units.
- C. Verify with Architect exact location of accessories.
- D. Coordinate the work of this Section with the placement of internal wall reinforcement and reinforcement to receive anchor attachments.

1.6 WARRANTY

- A. Special Warranty: Replace mirrors that exhibit signs of desilvering or distortion.

1. Special Warranty Period: Two years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Bobrick Washroom Equipment, Inc.
- B. Bradley Corporation.
- C. American Specialties, Inc.
- D. NuTone
- E. Substitutions: Refer to Section 01 62 00.

2.2 MATERIALS

- A. Stainless Steel Sheet: ASTM A666, commercial grade, Type 302/304, gages as standard with manufacturer of specified items.
- B. Stainless Steel Tubing: ASTM A269, commercial grade, seamless welded.
- C. Sheet Steel: ASTM A1008, cold rolled stretcher leveled; minimum G90 galvanized coating, ASTM A924 and A653.
- D. Adhesive: Epoxy type contact cement as recommended by accessory manufacturer.
- E. Fasteners, Screws, and Bolts: Hot dip galvanized; as recommended by accessory manufacturer for component and substrate.
- F. Keys: Provide universal keys for access to toilet accessory units requiring internal access for servicing and supply.
 1. Provide minimum six keys to Owner representative.
- G. Mirror Glass: ASTM C1036, q1 mirror select clear float glass with full silver coating, copper coating and organic coating; minimum 1/4" thick.

2.3 FABRICATION

- A. Weld and grind smooth joints of fabricated components.
- B. Form exposed surfaces from one sheet of stock, free of joints.
- C. Fabricate units with tight seams and joints, exposed edges rolled; hang doors and access panels with continuous piano hinges; provide concealed anchorage where possible.
- D. Provide steel anchor plates and anchor components for installation on building finishes.
- E. Form surfaces flat without distortion; maintain flat surfaces without scratches and without dents; finish exposed edges eased, free of sharp edges where

**SECTION 10 28 13
TOILET ACCESSORIES**

potential exists for physical contact.

- F. Back paint components where contact is made with building finishes, to prevent electrolysis.
- G. Hot dip galvanize ferrous metal anchors and fastening devices.
- H. Assemble components in shop; package complete with anchors and fittings.

2.4 FINISHES

- A. Exposed Finishes: Stainless steel, number 4, satin finish; satin chrome finish acceptable where stainless steel not available for accessory item listed or scheduled.
- B. Concealed Surfaces: Treat and clean, spray-apply one coat primer and baked enamel finish.

PART 3 EXECUTION

3.1 PREPARATION

- A. Provide templates and rough-in measurements.

3.2 INSTALLATION

- A. Install accessories in accordance with manufacturer's printed instructions using fasteners appropriate to substrate.
- B. Install true, plumb and level, securely and rigidly anchored to substrate.
- C. Use tamper-proof, security type fasteners.
- D. Adjust accessories for proper operation and verify mechanisms function smoothly.
- E. Replace damaged and defective items.
- F. Clean and polish exposed surfaces after removing temporary labels.

3.3 ACCESSORIES SCHEDULE:

- A. Refer to Drawings for Quantities and Locations of Accessories.

ITEM	MANUFACTURER	MODEL NO.
36" Grab Bar	Bobrick	B-5806 x 36
48" Grab Bar	Bobrick	B-5806 x 48
24" x 36" Mirror	Bobrick	B-290 - 24x36
Surface Mount Soap Dispenser	Bobrick	818615
Recessed Paper Towel Dispenser and Waste Receptacle	Bobrick	B-369
Recessed Toilet Seat Cover Dispenser	Bobrick	B-3013
Surface Mounted Utility Hook	Bobrick	B-670
Recessed Multi-roll Toilet Tissue Dispenser	Bobrick	B-35883
Recessed Sanitary Napkin Disposal	Bobrick	B-3513

END OF SECTION

PART 1 - GENERAL**1.1 SUMMARY**

- A. Section Includes: Provide manufactured electrically operable wood lectern with accessories as required for complete finished installation including hardware.
- B. Related Sections:
 - 1. Section 06 20 00: Finish carpentry.
 - 2. Section 06 41 00: Custom Casework
 - 3. Audiovisual work

1.2 SUBMITTALS

All submittals shall be submitted under the provisions of Section 01 33 00.

- A. Submittal No. 06 40 00A - Product Shop Drawings:
 - 1. Include materials, dimensioned plans, elevations, and sections, fastening methods, assembly methods, joint details, accessory listings, and schedule of finishes. Provide elevations at 3/8" scale minimum and indicate plan views of all countertops. Include depths of all casework in submittal.
- B. Submittal No. 06 40 00B - Samples: Furnish samples of each exposed lectern finish and including each exposed cabinet hardware.
- C. Submittal No. 06 40 00C - Certifications: WI MoM certification is required.
 - 1. General: Before delivery to jobsite, provide WI MoM Certified Compliance Certificate indicating grade of millwork products to be furnished and certify WI MoM requirements for specified grades shall be met.
 - 2. Lectern: Unit to bear WI MoM Certified Compliance Label.
 - 3. Installation: Provide WI MoM Certified Compliance Certificate for Installation.

1.3 QUALITY ASSURANCE

- A. Fabricator Qualifications: Member of Woodwork Institute (formerly Woodwork Institute of California) with minimum five years successful experience fabricating operable lectern similar to that required for Project.
- B. Standards: Perform architectural woodwork in accordance with recommendations Woodwork Institute (formerly Woodwork Institute of California) "Manual of Millwork" (WI MoM).
 - 1. Installation Certification Program: Install work in this section as specified in the WI MoM Manual of Millwork and provide WI MoM Certified Compliance Certificate for installation at completion of Project installation.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver lectern until site conditions are adequate to receive work; protect items from weather while in transit.
 - 1. Allow operable lectern shop finish to completely dry prior to delivery to site; allow materials to off-gas volatile organic compound (VOC) emissions off site.

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ELECTRICALLY OPERABLE LECTERN

- B. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and maximum relative humidity of 25% to 55%.
- C. Do not begin installation of lectern until space is fully enclosed and mechanical systems are fully operational.
 - 1. Maintain interior installation areas at 70 degrees F and 50% to 55% relative humidity.
- D. Immediately remove from site materials with visible mold and materials with mildew.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Marshall Furniture, Antioch, IL
- B. Chief Professional Mounting Systems
- C. Inca Corporation
- D. Substitutions: Under provisions of Section 01 62 00.

2.2 MATERIALS

- A. Operable Lectern:
 - 1. Quality: WI MoM/Custom Grade, Type II, Style A, flush overlay type.
 - 2. Veneer: Select White Birch unless otherwise indicated; veneers as approved by Architect; a uniform appearance shall be required.
 - a. Veneer Thickness: Minimum 0.036" thick.
 - b. Inside Surfaces: White Birch stained to match exterior veneers; melamine interior is not acceptable.
 - 3. Particleboard Core: Provide Medite Corp. (Sierrapine)Medite II or Rodman Industries/Resincore I formaldehyde-free medium density fiberboard (MDF) or particleboard made from recycled wood products.
 - 4. Exposed Edges: Hardwood matching veneer.
 - 5. Hardware: Premium quality hardware designed specifically for operable lecterns allowing electric switch to cause lectern surface to be raised and lowered to heights indicated on Drawings.
- B. Wood Filler: Color to match wood being filled.
- C. Lift assembly: Marshall Furniture part number MLM-HDM4 or equal.

2.3 FABRICATION

- A. General: Fabricate operable lectern in accordance with specified quality standards.
- B. Plastic Laminate:
 - 1. Apply plastic laminate finish in full, uninterrupted sheets consistent with manufactured sizes.
 - 2. Make corners and joints hairline; slightly bevel arises.
 - 3. Locate butt joints at least 2'-0" from cutouts.

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ELECTRICALLY OPERABLE LECTERN

4. Cap exposed edges with plastic laminate of same finish and pattern.
5. Apply laminate backing sheet to reverse side of laminate surfaces.
6. Provide cutouts for inserts, fixtures and fittings; verify locations from on-site dimensions.
7. Prime paint contact surfaces of cutouts.
8. Plastic Laminate Countertops: Square butt joints and self edging; applied plastic or metal edging not permitted.

2.4 FINISHES

- A. Finish operable lectern in shop unless otherwise indicated.
 1. Wood Veneers: Plain sliced Hard White Maple as approved by Architect.
 2. Veneering:
 - a. Matching Between Veneer Pieces: Book matched.
 - b. Matching of Panel Faces: Balanced matched.
 - c. Matching of Panels and Components: Sequenced matched.
 3. Sand work smooth; seal, stain and varnish concealed and semi-concealed surfaces of transparent finished woodwork; brush apply.
 4. Finish: WI MoM/Premium Grade finish producing a dull rubbed effect, as approved by Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Ensure all associated work, to include but not be limited to electrical and audiovisual, is properly installed and has been approved by Architect prior to placement of operable lectern.

3.2 INSTALLATION

- A. Install operable lectern under supervision of factory-trained mechanics.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Bullet Resistant Fiberglass, Level 3, sheet stock and general accessories for complete installation, where indicated on the drawings.
- B. Related Documents:
 - 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and division 1 Specifications sections apply to this work.
- C. Related Work:
 - 1. Section 09 21 16 Gypsum Board Assemblies.

1.2 REFERENCES

- A. "Underwriters Laboratory UL 752 10th Edition, Standard for Bullet Resisting Equipment dated March 10, 2000.
- B. ASTM E119-98 Standard Test for One-Hour Fire-Rating of Building Construction and Materials.

1.3 SUBMITTALS

- A. Product Data: Furnish manufacturer's literature for product, performance characteristics, and anchorage details.
- B. Samples: For the following products:
 - 1. Sample of product, minimum size 3-inch by 3-inch by thickness specified.

1.4 WARRANTY

- A. All materials and workmanship shall be warranted against defects for a period of two (2) years from the date of receipt at the project site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: The panels shall be made of multiple layers of woven roving ballistic grade fiberglass cloth impregnated with a thermoset polyester resin and compressed into flat rigid sheets. The production technique and materials used shall provide the controlled internal delamination to permit the encapture of a penetrating projectile.

**SECTION 13 07 00
BULLET RESISTANT FIBERGLASS**

2.2 MANUFACTURERS

- A. Manufacturer: In order to establish the level of design and quality required, the Bullet Resistant Fiberglass has been designed and specified around the following manufacturer's product:
 - 1. ArmorCore Level 3 by Waco Composites I. Ltd., Waco, Texas.
- B. Other Manufacturers are subject to Section 01 62 00 Product Options.
- C. Product Requirements:
 - 1. Thickness: 7/16 inch maximum thickness
 - 2. Weight: 4.9 pounds per square foot maximum weight.
 - 3. Quality Level: Provide Level 3 as per UL752 Standards.

PART 3 - EXECUTION

3.1 SUPPORTING MEMBERS

- A. Prior to installing the bullet resistive material the contractor shall verify that all supports have been installed as required by the contract documents and the architectural drawings.

3.2 JOINTS

- A. All joints shall be reinforced by a back-up layer of bullet resistive material. The bullet resistance of the joint, as reinforced, shall be at least equal to that of the panel. Minimum width of reinforcing layer at joint shall be 4-inches (2" on each panel or a 2" minimum overlap).

3.3 APPLICATION

- A. Product shall be installed in accordance with the manufacturer's printed recommendations. Product panels shall be adhered using an industrial adhesive, mastic, screws or bolts. Method of application shall maintain the bullet resistive rating at junctures with the concrete floor slab, at all adjoining materials or assemblies, and at all required penetrations.

END OF SECTION

PART 1 – GENERAL

1.1 INCLUDED

- A. This Specification establishes the required standards for all labor, materials, equipment, and workmanship in connection with the furnishing, fabrication, and installation of "Plumbing." Plumbing work includes, but is not limited to, the following items of work:
1. A complete system of soil, waste, vent, and sanitary sewer piping and structures, including provisions for mechanical equipment drainage; and connection of same to public sanitary sewers, located as indicated on the Drawings.
 2. Cold water distribution system, complete, from points of contact with site domestic water systems (located approximately as indicated on the Drawings) to all plumbing fixtures, mechanical equipment, building specialties, and Owner supplied equipment scheduled for service on the Drawings.
 3. Hot water distribution system, complete, from serving water heaters and/or points of contact with site domestic hot water, to all plumbing fixtures, mechanical equipment, building specialties, and Owner supplied equipment schedule for service on the Drawings.
 4. All plumbing fixtures and trim as scheduled on the Drawings, inclusive of setting of Fixtures and connections to drainage and water supply systems.
 5. Flashing of all plumbing pipe penetrations through exterior walls, roofs, and foundations. Sheet metal and lead flashings for pipe penetrations through roofs shall be furnished by the Plumbing Contractor and installed by the appropriate Roofing Contractor.
 6. Excavation and backfill as required for the work of this Section in conformity with Earthwork Section of the Specifications.
 7. Rough in and connection of all fixtures and equipment furnished by the Owner and/or Tenant.
 8. Final connection of water and gas to equipment furnished under other Sections.
 9. Protection of all piping specified herein and/or shown on the Drawings, from freezing. Buried piping shall be a minimum 12" below the local front line. Piping above grade in unconditioned areas shall be insulated.
 10. Testing and adjusting of all piping systems and equipment herein specified.
 11. Sterilization of domestic water systems.
 12. Pipe wrapping and insulation.
- B. Should any work or material not be included in the Drawings or Specifications but it nevertheless necessary for the proper execution of the stated scope therefore for full compliance with codes, laws, rules, and regulations, the Contractor shall understand such work and material is required, and shall perform all such work.

1.2 LICENSES, PERMITS, AND FEES

- A. The Contractor shall provide, procure, and pay for all licenses, permits, fees, etc. as required to carry on and complete their work.

1.3 CODES AND STANDARDS

- A. All work shall be done in code with all applicable local, state, and federal building safety codes, ordinances, and regulations. Additionally, all work shall conform to the following standards:
1. 2022 National Fire Protection Association.
 2. 2022 California Mechanical Code.
 3. 2022 California Plumbing Code.
 4. 2003 Underwriters Laboratories.
 5. Titles 8, 17, 19, 21, 24 of the California Code of Regulations.
 6. 2022 California Electric Code.

- B. When the Contract Documents call for materials or construction of a higher standard than is required by the above, the Contract Document requirements shall take precedence over the requirements of the applicable laws, ordinances, rules, or regulations. Nothing in the Contract Documents shall be interpreted as permitting work in violation of said laws, rules, and/or regulations.
- C. The Contractor for this work shall furnish, without extra charge, any additional materials and/or labor as may be required for compliance with these laws, rules, and/or regulations though such materials and/or labor are not specially set forth in the Contract Documents.

1.4 LICENSING REQUIREMENTS

- A. All plumbing systems shall be installed by a C-36 Plumbing Contractor. Plumbing systems include: waste removal and connection of on-site waste disposal systems; piping, storage tanks, and venting for supply of gases and liquids for any purpose; all gas appliances, flues, and gas connections; water and gas piping from the Owner's side of utility meter to the structure or fixed works, installation of any type of equipment to heat water or fluids to a suitable temperature; and maintenance and replacement of the items described above, including health and safety devices.

1.5 SUBMITTALS

- A. All fixtures, materials, and equipment equal in quality and utility to these herein mentioned will be accepted. When specific names are used in describing fixtures, materials, and equipment they are mentioned as standards only, but this implies no right on the part of the Contractor to use other fixtures, material, and equipment or methods, unless approved as equal in quality and utility by the Architect.
- B. Before any fixtures, materials, or equipment are purchased, the Contractor shall submit to the Architect for approval, a complete list of materials, fixtures, and equipment, giving the manufacturer's names, model numbers, and catalog sheets.
- C. The Contractor shall submit for the approval of the Architect, shop drawings of proposed material and equipment that differ from the specified materials and equipment, and of any specified materials and equipment with special conditions and/or arrangements. These drawings shall show necessary modifications of owner, plumbing, electrical, and mechanical work required by the proposed materials and equipment.
- D. Submittal lists and drawings shall include identifying marks assigned by the Drawings and Specifications.
- E. Review of drawings and other material submitted shall not be construed as complete check or constitute a waiver of the requirements of the Drawings and Specifications, but will indicate that the material submitted is acceptable in quality and utility. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided, and to effect necessary rearrangements or construction of other work.

1.6 COOPERATION WITH OTHER TRADES

- A. Cooperate fully with other trades doing work on the project as may be necessary for the proper completion of the project. Refer to the Structural, Mechanical, and Electrical Drawings for details of the building structure and equipment installation that will tend to overlap, conflict with or require coordination with the work of this Section, and schedule this work accordingly.
- B. Any work done without regard for other trades shall be moved, replaced, or redone as required, without extra charges to Owner.

1.7 AS-BUILT DRAWINGS

- A. A complete set of Contract Drawings shall be maintained at the work site, and all changes in the work shall be recorded on this set, on a daily basis. The final as-built drawings shall be submitted to the Owner's Representative for approval.

1.8 DRAWINGS

- A. The drawings indicate diagrammatically the general layout of the plumbing systems and other related work. Field verification of scaled dimensions taken from the Drawings is required.
- B. The Contractor shall review and compare the Architectural, Structural, Plumbing, Mechanical, and Electrical Drawings and all Owner supplied equipment Drawings, and adjust their work to be in conformity with the conditions indicated thereon. Discrepancies between drawings, between drawings and actual field conditions, or between Drawings and Specifications, shall promptly be brought to the attention of the Architect for a determination of the modifications to be effected. In the event that a major modification is required, a Change Order will be prepared.

1.9 VERIFICATION OF EXISTING CONDITIONS AND DEMOLITION

- A. Before installation of any new work, verify the location, size, and other conditions at all points of connection to services or other existing piping, and at all locations where new work will cross or pass near existing piping, electrical, or other facilities.
- B. Patch, cap, or repair existing works affected by this demolition in concealed spaces within six (6) inches of a live main or branch.
- C. Deliver removed material to the Owner as directed by the Architect. Dispose of all other removed material offsite.
- D. Information shown relative to existing services is based upon available records and data during preparation of the Drawings, but shall be verified. Make reasonable deviations found necessary to conform to actual locations and conditions, without extra charge.
- E. The data given herein and on the Drawings are as exact as could be reasonably secured, but absolute accuracy is not guaranteed. Exact locations, distances, elevations, etc. will be governed by shop drawings, the building itself, and actual field conditions.

1.10 DAMAGE BY LEAKS

- A. Contractor shall be responsible for any damage to work of other Contractors that is caused by leaks in any temporary or permanent piping systems due to pipe rupture, disconnected pipes or fittings, or by overflow of equipment.

1.11 SEISMIC FORCE RESISTANCE: MECHANICAL, PLUMBING, FIRE PROTECTION SYSTEMS

- A. All mechanical systems and plumbing piping systems shall adhere to the SMACNA "Seismic Restraint Manual: Guidelines for Mechanical Systems," Third Edition, dated March 2008.

1.12 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall be responsible for delivery, storage, protection, and placing of all equipment and materials.
 - 1. Contractor shall protect the work and materials from damage during construction. Equipment stored at the job site shall be protected from dust, water, or other damage, and be covered if equipment is exposed to weather. Protect interiors of new equipment

and piping systems against entry of foreign matter. Clean both inside and outside before painting or placing equipment in operation.

2. Any items damaged shall be repaired or replaced, at no additional cost to the Owner.

B. Cleanliness of Piping and Equipment Systems

1. Exercise care in storage and handling of equipment and piping material to be incorporated in the work. Remove debris arising from cutting, threading, and welding of piping.
2. Piping systems shall be flushed, blown, or pigged as necessary to deliver clean systems.
3. Contractor shall be fully responsible for all costs, damage, and delay arising from failure to provide clean systems.

1.13 WARRANTIES

- A. Equipment warranties shall be provided for all equipment, with all necessary information filled in, except purchase date, in favor of the Owner.
- B. The contractor shall guarantee that all work under this Section is free from defects in material and workmanship for a period of one year from the date of filing the Notice of Completion. Replacement of defective work and damage caused to work of other trades as a result of such defective work shall be the responsibility of the Contractor, and shall be made at no cost to the Owner.

1.14 ALTERNATIVE MATERIALS AND METHODS

- A. These plans and specifications describe the general scope of the mechanical systems. These plans and specifications do not preclude the submittal of alternative methods or materials. Manufacturer's names and catalog numbers are stated to identify the type and quality of the equipment or materials required for the project.
- B. The contractor may submit shop drawings and/or technical information on alternative equipment, materials or installation details to accomplish the intent of the plans and specifications. Approval of the alternative equipment, materials or installation details shall not relieve the contractor of any responsibility for complying with the intent of the plans and specifications. Submit the manufacturers' technical information, shop drawings, and/or written description of alternative methods for each item described by manufacturer's name and catalog number and for each component, equipment, material, or installation detail required.

1.15 SITE EXAMINATION

- A. Thoroughly examine the site and verify the actual work conditions. No extra compensation will be allowed for expenses due to failure to discover site conditions which affect the work.

PART 2 – PRODUCTS

2.1 GENERAL

- A. Only specified material shall be utilized in the work of this Section unless substitutions have been approved in accordance with the General Conditions and Division 1 Sections of the Specifications.
- B. All materials shall be new and unused, of the best quality for the intended use, and shall be listed by the ASA, AGA, and UL as meeting their requirements and bearing their label wherever standards have been established and label services are regularly furnished by them.

2.2 PIPE AND FITTINGS

A. Sanitary Soil, Waste, and Vent Piping:

1. Below Ground

- a. Lines 2" and larger shall be service weight, hub-less cast iron soil pipe and fittings, and shall conform to the requirements of ASTM A 888 and CISPI Standard 301. Approved manufacturers: Charlotte, Tyler, or AB&I.
- b. Joints: Couplings shall conform to the requirements of ASTM C1540 and shall be heavy duty type 304 stainless steel shielded, having 4 sealing clamps for pipe sizes 1 ½" thru 4", and 6 sealing clamps for pipe sizes 5" thru 10". Gaskets shall comply with ASTM C-564. Anaco, Tyler, or equal.

2. Above Ground

- a. Lines 2" and larger shall be standard weight, hub-less cast iron soil pipe and fittings, and shall conform to the requirements of ASTM A 888 and CISPI Standard 301. Approved manufacturers: Charlotte, Tyler, or AB&I.
- b. Joints: Couplings shall conform to the requirements of ASTM C1540 and shall be heavy duty type 304 stainless steel shielded, having 4 sealing clamps for pipe sizes 1 ½" thru 4", and 6 sealing clamps for pipe sizes 5" thru 10". Gaskets shall comply with ASTM C-564. Anaco, Tyler, or equal.

B. Cold and Hot Water Piping

1. All domestic cold water piping 3" and smaller shall be Type L, hard temper, copper pipe with wrought copper or cast brass solder joint fittings. All joints shall be made up with "Stay-Safe 50" lead free solder. A suitable non-corrosive flux shall be used at all joints.
2. Pipes below grade inside buildings shall be soft drawn, Type L or K copper with no joints below slabs. Pipes shall be sleeved with 20-mil plastic sheathing.

2.3 UNIONS

- A. Steel pipe unions shall be malleable iron, 150lb., ground joint, Grinnell Fig. 463.
- B. Copper pipe unions shall be soldered joint, Nibco series 633 or 733, Mueller, or equal.
- C. Dielectric unions shall be EPCO or equal.

2.4 VALVES, SPECIALTIES

- A. Ball Valves: Nibco T-580, bronze body, "Ring Ball," conventional port, two piece, lever handle, 125 lb.
- B. Check Valves: Nibco T-480, bronze body, inline lift type, Teflon seat, and discs, spring actuated, 125 lb.
- C. Gate Valves: 3" and smaller shall be NIBCO T134 or Stockham B-120 or B-124, bronze body, union bonnet, rising stem, solid wedge, 150 lb. with wheel handle.
- D. Gas Shut-off Valves:
 1. At Building Service: Homestead Fig. 601, semi-steel, lubricated plug, lever handle, 200. Lb. Install CALIFORNIA Series 300 seismic actuated shut off valve at entrance to building. Brace per manufacturer's instructions.
 2. At Connection to Equipment: Jomar T-203 gas ball valves, ¼-turn, hot forged brass, 2-piece design, standard port, appliance type with side tap/drain. Provide with ADA certified stainless steel flex connection 12" max.

- E. Check Valves: NIBCO T-413, Stockham B-345, bronze body, Y-pattern lift type, Class 200.
- F. Gas Shut-off Valves: Homestead Fig. 601, semi-steel, lubricated plug, lever handle, 200 lb.
- G. Relief Valves: Water heater temperature/pressure relief valve, Watts, M&M, or equal with ASME rating, and AGA certified design. Set at 125 psi and 210°F.
- H. Backflow Preventers (where shown on the Drawings or required by local code):
 - 1. Atmospheric type; Wilkins #35 series.
 - 2. Pressure type: Wilkins #720A series.
 - 3. Reduced pressure type:
 - a. ¼" to 2" – Wilkins #975-XLMS series.
 - b. 2 ½" to 10" – Wilkins #375 series.
- I. Water Pressure Regulating Valves: Wilkins 500 YSBR series. Install where pressure to building exceeds 70 psi.
- J. Gas Pressure Regulators: American Regulator, Series 1813C. Regulators shall be sized for full gas capacity of equipment as scheduled on the Drawings. Inlet pressure shall be 5 psig. Outlet pressure shall be 7" water column. Regulators installed indoors shall have relief opening piped to outdoors. Size relief pipe in accordance with ANSI Z223.1 "National Fuel Gas Code."

2.5 HANGERS, SUPPORTS

- A. Installation of piping shall be such that damage cannot result through loading, expansion, or contraction of piping. Anchors shall be installed to obtain uniformity of pipe movement.
- B. Pipe supports shall be spaced sufficiently close to support pipes properly without formation of pockets. Hangers shall be installed at ends of mains and branches and maximum intermediate spacing shall be as follows:

	MAXIMUM SPACING, (FT.)		MINIMUM ROD DIAMETER	
	Pipe Diameter, Inches		Pipe Dia.	Rod Dia.
	1" & Less	1-1/4" & More	Inches	Inches
Steel	8	10	2 & Less	3/8
Copper	6	8	2-1/2 to 3	½
Cast Iron	5 (One min. per length & fitting)		4 & Larger	5/8

- C. Pipe hangers shall be Superstrut, B-Line, or equivalent Grinnell. All hangers shall be electrochromate finished. Hanger rods shall have electro-galvanized finish.
- D. Steel pipe, cast iron soil pipe: C-711 pipe hangers.
- E. Copper tubing: C-711 pipe hanger complete with C-716 isolator.
- F. Insulated pipe: C-711 pipe hanger fitted to outside of insulation with C-790 galvanized shields.
- G. Trapeze Hangers
 - 1. Grouped pipes may be supported by A-1200 channel bolted to rods.
 - 2. Copper and steel pipe shall be attached to channels with A-716 "Cush-A-Clamp."
- H. Cast iron soil pipe shall be supported with C-711 pipe hangers with rods attached to the bottom of channels.

- I. Point of Support Connectors
 - 1. Wood Construction
 - a. 540 side beam hanger for stationary pipes.
 - b. S-541 for pipes subject to movement.
 - 2. Vertical Pipe Risers: Vertical pipes risers shall be securely supported with C-720 pipe clamps (C-720P for bare cold water pipe) anchored to construction.
- J. Provide resilient mounting for domestic water piping. Thermal insulation may serve as resilient mounting for insulated piping.
- K. Suspended water piping shall be anchored with steel struts installed at midpoint of each run.
- L. No valve or piece of equipment shall be used to support piping.

2.6 CLEANOUTS

- A. Cleanouts in membrane damp-proofed floors shall have flashing flange and membrane clamps. Plugs shall be bronze, with cast iron body ferrule for cast iron pipe.
- B. Floor Cleanouts (FCO): Zurn ZN 1400-HD, "Level-trol" adjustable cleanouts, dura-coated cast iron with gas and water-tight ABS tapered thread plug, and round scoriated top, adjustable to finished floor .
- C. Grade Cleanouts (GCO): Zurn Z-1474-IN or equal JR Smith. Housing to be dura-coated cast iron body with integral anchor flange and scoriated cover with lifting device. Cleanouts in unpaved areas shall be set in 18" x 18" x 4" co
- D. Wall Cleanouts (WCO):
 - 1. Copper tubing: Nibco Figure 816 or 817, with Zurn Z-1462, 6" x 6" polished chrome-plated bronze wall plate and frame.
 - 2. Cast iron pipe: Zurn Z-1441, dura-coated with gas and water-tight bronze, taper thread plug and round smooth stainless steel access cover with securing screw.
 - 3. Steel pipe: Zurn Z-1468, round stainless steel wall access cover, complete with securing screw and bronze raised hex head plug for steel pipe.

2.7 SLEEVES, WALL PLATES

- A. Service pipe through exterior wall, roofs: Crane Style BC wall and ceiling plates; chrome plated at finished rooms.
- B. Pipes through, under footings: 18 gauge iron sleeves two diameters larger than pipe, cast in concrete, annular space filled with mastic or plastic bituminous cement.
- C. Pipes through fire rated walls shall be protected with fire retardant mastic as detailed on the Drawings. Installation shall be in full accordance with the requirements of the UL system number. Hilti or approved equal.
- D. Wall and ceiling plates: Crane Style BC or equal; chrome plated at finished rooms.
- E. Pipes through floors, interior concrete walls, and through fire rated wall and smoke stop partitions: 18 gauge iron sleeves, two diameters large than pipe, annular space filled with 3M Brand Fire Barrier CP-25 caulk.
- F. Pipes through 1-hour walls shall be protected with fire retardant mastic as detailed on the Drawings. Installation shall be in full accordance with the requirements of the UL system number. Hilti or approved equal.

2.8 ACCESS DOORS

- A. Where construction is not inherently accessible, provide adequately sized and conveniently located access doors in ceiling, walls, and furring for servicing vales, equipment, etc.
- B. Access doors shall be Karp, Milcor, or equal, prime coated steel for all surfaces except ceramic tile, 12" x12" minimum size as required. Locks shall be flush, screwdriver operated.
 - 1. Style KDW for gypsum board surfaces.
 - 2. Style PL for plaster surfaces.
 - 3. Style 210 for acoustic tile surfaces.
 - 4. Style DSC 214-M satin finish stainless steel at ceramic tile surfaces.
 - 5. Style "Fire Rated" at rated ceilings and walls.

2.9 PIPE INSULATION

- A. Insulate all hot water supply piping, all hot water return piping, all cold water supply piping in exterior walls or unconditioned spaces with Manville "Micro-Lok" 650, Fiberglass, Certainteed, or equal, rigid fiberglass one-piece pipe insulation with and all purpose jacket. Jackets shall be constructed of high density, white kraft bonded to aluminum foil with fiberglass yarn, with a pressure sensitive closure system.
- B. All insulation shall have composite (insulation, jacket, and adhesive used to adhere the jacket to the insulation) Fire and Smoke Hazard ratings as tested under procedure ASTM E-84, NFPA 255 or UL 723, not exceeding: Flame Spread – 25, Smoke Developed – 50.
- C. Inserts shall be installed at outside hangers. Inserts between the pipe and pipe hangers shall consist of rigid pipe insulation of thickness equal to the adjoining insulation. Inserts shall not be less than 10" long for pipe sizes through 2 ½" and not less than 12" long for pipes larger than 2 ½".
- D. Metal shields shall be applied between hangers or supports and the pipe insulation. Shields shall be formed to fit the insulation and shall extend up to the centerline of the pipe and the length specified for hanger inserts.
- E. Insulation thickness shall be as follows:
 - 1. All piping 1" and smaller: 1"
 - 2. All piping 1 ¼" and larger: 1 ½"

2.10 PIPE LABELS

- A. All new domestic cold water, hot water, and hot water recirculation piping shall be clearly labelled.
- B. Industrial safety solutions piping labels shall be rated for indoor and outdoor use and be attached with permanent adhesive.
- C. Labels shall show the direction of flow and indicate the process media. Pipe labeling color and text size shall conform to ANSI/ASME A13.1-2007. Process piping shall be labeled a minimum of twice per room in locations designated by the Engineer.

2.11 FIXTURES

- A. The quantity and location of fixtures shall be taken from the Architectural and Plumbing Drawings. Provide adequate supports and all standard trim normally furnished for fixtures. All enamel shall be acid resisting. Traps, unless otherwise noted shall be 17 gauge brass tubing, chrome plated when exposed.

- B. Except as otherwise shown, provide ¼" steel backing plates, 36" wide by 12" high minimum size, secured to a minimum of three studs by welding, or with ¼" x 2 ½" lag screws for all wall hung fixtures for which no other means of support is specified.
- C. Stops and supplies: Provide stops for all fixtures. Unless otherwise specified, stops exposed at lavatories and similar fixtures shall be Chicago #1016-ABCP, chrome plated, loose key. Concealed stops shall be Chicago #1771.
- D. All fixtures shall meet or exceed the requirements of the California Administrative Code, Title 24, Part 5.

2.12 SHOCK ABSORBERS

- A. Zurn, "Shoktrol," or equal JR Smith, stainless steel bellows. Install with gate valve shut-off and access door at all flush valves or other automatic valves. A single unit sized in accordance with the manufacturer's recommendations may serve batteries of valves.

2.13 VALVE BOXES

- A. Christy #F-08, complete with concrete cover and required extensions. Index all covers "GAS" or "WATER" as required for service use.

PART 3 – EXECUTION

3.1 SURFACE CONDITIONS

- A. This Contractor shall be held to have examined the site and compared it with the Contract Documents, and to adequately understand the conditions under which the work is to be performed. In the event of discrepancy, this Contractor shall notify the Architect and proceed as directed. This Contractor shall be held responsible for all existing conditions, whether or not accurately described, and no allowance shall subsequently be made on his behalf for any error, omission, or extra expense due to failure or neglect to make such examination and notification.
- B. Prior to commencing the work of this Section, this Contractor shall inspect the installed work of other trades and verify that their work is sufficiently complete to permit the start of work under this Section and that the completed work will be in complete accordance with the original design. In the event of discrepancy immediately notify the Architect and proceed as directed.

3.2 ACCESSIBILITY

- A. Equipment shall be placed and piping connections made in such a manner that all routine adjustments and maintenance operations may be carried out without inconvenience and so that all code requirements for clearances are maintained.

3.3 VIBRATION AND SOUND CONTROL

- A. Make all necessary provisions to prevent the transmission of vibration to the building structure, including flexible pipe connections to motor driven equipment, resilient mounting for piping, and sealing off pipe and duct penetrations of walls and roof.

3.4 INSULATION

- A. Insulation shall be applied in complete accordance with the manufacturer's published installation instructions. All insulation shall be applied on clean, dry surfaces and shall be continuous through wall and ceiling opening and sleeves. All joints shall be firmly butted together and longitudinal jacket laps and butt strips shall be smoothly secured. Specified adhesives, mastics, and coatings shall be applied at the manufacturer's recommended minimum coverage per gallon.

3.5 PIPING INSTALLATION – GENERAL

- A. Rough in shall proceed as rapidly as general construction will permit. All rough-in shall be complete, at locations verified by Architect and Owner, and tested and inspected prior to installation of concrete, lath, plaster, gypsum wallboard, or other finishes.
- B. All piping shall be concealed in finished rooms, installed in furred walls and partitions. Where furred or suspended ceilings occur, piping shall be installed in the concealed space at points adjacent to beams and/or other structural members, and coordinated with ductwork and equipment. Where exposed piping occurs, it shall be installed parallel to or at right angles to building walls, unless specifically shown otherwise on the Drawings.
- C. Installation of piping shall be such that damage cannot result, through thermal expansion or contraction, to piping, building, or pipe hangers and supports. Anchors shall be installed at midpoints of all runs in main piping for the purpose of localizing pipe expansion or prevention of creepage.
- D. All pipe lines shall be installed free from traps and air pockets, true to line and grade, with suitable supports properly space. All piping shall be installed without undue stresses and with provision for expansion and contraction.
- E. All piping shall be new and free from foreign substances. American standard pipe threads shall be used for IPS threaded work. Joints in threaded piping shall be made up with Teflon tape applied to the male threads only. No screwed pipe joints shall be caulked or packed with rope or other packing materials. Pipe shall be free from tool marks, threads cut accurately with not more than two (2) threads showing beyond fitting. Friction wrenches shall not be used with plated, polished, or soft metal piping. All changes in pipe size shall be made with reducing fitting. Bushings will not be permitted.
- F. Protect unattended openings in piping during construction.
- G. No water or drainage piping shall pass over electrical equipment unless adequate protection is provided to prevent damage by leaks or condensation.
- H. All copper tubing shall be formed in a workmanlike manner, in accordance with the Pipe and Tube Bending Handbook of the Copper and Brass Research Association. A tube bender giving support to the periphery of the tube shall be used. The tubing shall be protected against flattening or other injury.
- I. All copper connections and joints shall be made in accordance with the Copper Tube Handbook, Copper and Brass Research Association. No swaged connections will be permitted. All valves, pumps, and similar equipment shall be connected to copper piping through union or flange adapter fittings.
- J. Valves, cocks, etc., shall be installed to allow convenient accessibility and operation.
- K. Unions and flanges shall be installed to allow convenient replacement of all equipment and clearing tubes.
- L. A union connection shall be installed downstream from all valves, at equipment connections and at other locations as required or directed.

- M. Shut off valves shall be provided in all main services, and where required to permit proper servicing of equipment. Valves of one type shall be of one manufacturer.
- N. All valves shall be of the same size as the pipelines in which they are installed, unless specifically sized on the Drawings. All hand controlled line valves shall be ball valves, except where throttling control or frequent operation is required, in which case globe or angle valves shall be used. Globe valves in horizontal lines shall be installed with stem in horizontal to permit line draining. All globe and angle valves shall be installed to close against pressure. Disc valves shall have discs suitable for the services for which they are to be used.
- O. All valves shall be accessible and shall not be installed with the stems below the horizontal plane. Provide access panels at walls, ceilings, or floors.
- P. Provide prime coated escutcheon plates at all points where exposed piping penetrates finished wall ceilings or floors.
- Q. Cutting or boring of joists or other structural members shall be done only when alternative routing is impossible and only upon written approval of the Architect or Owner.

3.6 INSTALLATION, PIPING

- A. Flashing
 - 1. All roof and wall penetrations shall be flashed and counterflashed water tight with 26 gauge sheet metal, except as noted.
 - 2. Vents through roof shall be flashed with Semco #1100-4 lead flashing assemblies. Flashing shall extend over top of pipe and shall be turned down inside top of pipe.
- B. Soil, Waste, Vent, Drain Piping
 - 1. Soil, waste, and vent piping occurring within the building shall be installed to a uniform minimum grade of $\frac{1}{4}$ " per foot unless otherwise noted. Vent piping shall be graded so that all condensation shall flow directly to a soil or waste line.
 - 2. Changes in direction of drainage piping shall be accomplished by the use of appropriate drainage and sanitary fittings.
 - 3. Protection against breakage of piping passing under or through walls shall be provided using specified sleeves and caulking.
 - 4. Adapters shall be installed between threaded iron and soil pipe.
 - 5. Test tees shall be installed at the foot of all soil, waste, and storm water stacks.
 - 6. Cleanouts shall be located where indicated on the Drawings; at all horizontal offsets; at ends of waste or sewer branches more than 5' in length; at intervals of 100' in straight runs of piping, or at closer intervals if directed or required by local code. Location of cleanouts in finished spaces shall be approved by the Architect prior to installation.
- C. Hot and Cold Water Systems
 - 1. Di-electric unions shall be installed where copper pipe is connected to galvanized steel piping or stub outs.
 - 2. Connections from copper pipe to fixture supply fittings shall be made with copper or brass nipples.
 - 3. All domestic water piping shall be kept clear of the building structure. Where it is within 1" of the building structure, it shall be wrapped with felt (3/16" minimum thickness).
 - 4. To the greatest extent possible, domestic cold water piping shall be kept separated from hot piping and where there is a choice shall be run in the coolest portion of the available space.
- D. Plumbing Fixtures
 - 1. Space between wall mounted fixtures and wall surface shall be neatly pointed up with silicone rubber compound of color matching fixture.

2. All exposed bolt heads and nuts used to secure fixtures shall be concealed with vitreous china caps.
3. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.

E. Excavation and Backfill

1. Provide all excavation, trenching, and backfill in connection with the work of this Section.
2. Excavation shall be carried to 4" below the bottom of pipes. Provide a sand bedding for all sloped drainage piping, and provide smooth uniformly graded bedding of firm but yielding material for all other piping, catch basins, and similar structures.
3. Backfill material shall be non-corrosive and free from all foreign material that could damage pipes. Backfill shall be placed in 6" layers, each layer tamped, and compacted to 95% of maximum dry density (ASTM D-1557-64T (c) compaction test procedure).

3.7 INSTALLATION, HANGERS & SUPPORTS

- A. Installation of piping shall be such that damage cannot result through loading, expansion, or contraction of piping. Anchors shall be installed to obtain uniformity of pipe movement.
- B. Hanger rod sizes shall be no smaller than 3/8-inch for pipe and tube sizes 1/2 to 4 inches and 1/2 inch for sizes 5-8 inches.
- C. Pipe supports shall be spaced sufficiently close to support pipes properly without formation of pockets. Hangers shall be installed at ends of mains and branches. Maximum horizontal support spacing shall be as follows:
 1. Steel Pipe for Water or DWV: 10 feet for pipe sizes 3/4 inch and smaller and 12 feet for sizes 1 inch and larger.
 2. Steel and Tinned Copper Pipe for Gas: 6 feet for 1/2 inch pipe; 8 feet for sizes 3/4 to 1 inch, and 10 feet for sizes 1 1/4 inch and larger.
 3. Copper Tube and Pipe, soldered or brazed: 6 feet for pipe sizes 1 1/2 inches and smaller and 10 feet for sizes 2 inches and larger.
 4. Hubless Cast-Iron shall be supported at every other joint, unless over 4 feet, then support each joint. Support adjacent to joint, not to exceed 18 inches, brace at not more than 40 foot intervals to prevent horizontal movement. Support at each horizontal branch connection. Hangers shall not be placed on the coupling.
- D. Provide resilient mounting for domestic water piping. Thermal insulation may serve as resilient mounting for insulated piping.
- E. Suspended water piping shall be anchored with steel struts installed at midpoint of each run.
- F. No valve or piece of equipment shall be used to support piping.
- G. Pipes through studs or joists shall be isolated from structure with properly sized Hubbard "Hole-Rite" suspension clamps.

3.8 TESTING, INSPECTIONS

A. General

1. This Contractor shall not allow or cause any work of this Section to be covered or enclosed until it has been inspected, tested, and approved by the Architect and the authorities having jurisdictions over the work. Should any of this work be enclosed or covered up before such inspection, testing, and approval, this Contractor shall uncover the work, have the necessary inspections, tests, and approvals made and, at no expense to the Owner, make all repairs necessary to restore both his work and that of other

contractors that may have been damaged, to be in conformity with the Contract Documents.

B. Tests

1. This Contractor shall make all tests required by all local, state, and federal laws, codes, ordinances, and regulations having jurisdiction over this work.
2. Furnish all necessary labor, materials, and equipment for conducting tests, and pay all expenses in connection therewith. Should leaks develop while testing, repairs shall be made, and tests shall be repeated until a satisfactory test is obtained.
3. Water Piping shall be hydrostatically tested for 6 hours at 150 psi. All equipment shall be tested water tight at utility pressure.
4. Drainage and Vent Piping shall be tested for 1 hour by plugging all outlets and filling the pipes with water to the top of vertical sections of pipes. No loss of water shall be permitted.

3.9 DOMESTIC WATER SYSTEM STERILIZATION

- A. Upon completion of this work, the domestic water system shall be thoroughly flushed, sterilized, and refushed. Sterilization and refushing shall be performed using the following procedure.
1. All work shall be performed in the presence of the inspector.
 2. Introduce chlorine or a solution of sodium hypochlorite, filling the lines slowly and supplying the sterilization agent at a rate of 50 parts of chlorine per million, as determined by residual chlorine tests at the ends of all branches. Open and close all valves while the system is being chlorinated to insure uniform distribution.
 3. After the sterilizing agent has been applied for 24 hours, test for residual chlorine at the ends of the branches. If less than 5 ppm is indicated, repeat the sterilization procedure.
 4. When tests show at least 5 ppm of residual chlorine, flush out the system until all traces of the chemical are removed.
- B. After a period of 48 hours minimum, bacteriological tests, using samples from at least 3 representative points shall be made by recognized testing agency, who shall certify to the Architect that the system is bacteriologically safe and at least equal in safety to that of the principal water supply. The laboratory report and certification shall be transmitted to the Architect and Owner.

3.10 ADJUSTING

- A. Properly adjust all stops, and controls, and demonstrate safe and satisfactory operation of all equipment.

3.11 CLEANING

- A. Flush all water piping systems. Remove, clean, and replace all strainer baskets prior to final inspection.
- B. Blow out all compressible fluid piping with compressed air before connecting with regulators or equipment.

3.12 CLEANUP

- A. Upon completion of the work of this Section, remove all surplus material, debris, and equipment associated with or used in the performance of this work.

END OF SECTION

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PART 1 GENERAL

1.1 INCLUDED

- A. This section covers mechanical work, complete. Work includes furnishing, installing, calibrating, adjusting, testing, documenting, and starting up equipment in accordance with these Specifications, the accompanying Plans, and the directions of the Engineer.

1.2 LICENSES, PERMITS, AND FEES

- A. The Contractor shall provide, procure, and pay for all licenses, permits, fees, etc. as required to carry on and complete their work.

1.3 CODES AND STANDARDS

- A. All work shall be done in code with all applicable local, state, and federal building safety codes, ordinances, and regulations. Additionally, all work shall conform to the following standards:
 - 1. 2022 National Fire Protection Association.
 - 2. 2022 California Mechanical Code.
 - 3. 2022 California Plumbing Code.
 - 4. Underwriters Laboratories.
 - 5. Titles 8, 17, 19, 21, 24 of the California Code of Regulations.
 - 6. 2022 California Electric Code.
 - 7. SMACNA Standards.
 - 8. ASHRAE Standards 55 and 62.1.
- B. When the Contract Documents call for materials or construction of a higher standard than is required by the above, the Contract Document requirements shall take precedence over the requirements of the applicable laws, ordinances, rules, or regulations. Nothing in the Contract Documents shall be interpreted as permitting work in violation of said laws, rules, and/or regulations.
- C. The Contractor for this work shall furnish, without extra charge, any additional materials and/or labor as may be required for compliance with these laws, rules, and/or regulations though such materials and/or labor are not specially set forth in the Contract Documents.

1.4 LICENSING REQUIREMENTS

- A. All work of Division 22 and 23 shall be performed by an appropriately licensed contractor. The licenses shall be current, valid through the term of the contract and in the name of the contractor.
 - 1. All HVAC work, which includes warm air heating systems and water heating pumps, ventilating systems, air conditioning systems, and ductwork, registers, flues, humidity, and thermostatic controls in connection with these systems, shall be performed by a C-20 – Warm-Air Heating, Ventilating and Air-Conditioning Contractor.
- B. All hydronic piping systems shall be installed by a C-4 – Boiler, Hot Water Heating and Steam Fitting Contractor.

1.5 SUBMITTALS

- A. General Requirements

1. Submittal lists and drawings shall include identifying marks assigned by the Drawings and Specifications.
2. Review of drawings and other material submitted shall not be construed as complete check or constitute a waiver of the requirements of the Drawings and Specifications, but will indicate that the material submitted is acceptable in quality and utility. This review shall not relieve the Contractor of the responsibility to fit the proposed materials to the spaces provided, and to effect necessary rearrangements or construction of other work.
3. All fixtures, materials, and equipment equal in quality and utility to these herein mentioned will be accepted. When specific names are used in describing fixtures, materials, and equipment they are mentioned as standards only, but this implies no right on the part of the Contractor to use other fixtures, material, and equipment or methods, unless approved as equal in quality and utility by the Architect.
4. Before any fixtures, materials, or equipment are purchased, the Contractor shall submit to the Architect for approval, a complete list of materials, fixtures, and equipment, giving the manufacturer's names, catalog number, capacity, size, power requirements, etc.
5. The Contractor shall submit for the approval of the Architect, shop drawings of proposed material and equipment that differ from the specified materials and equipment, and of any specified materials and equipment with special conditions and/or arrangements. These drawings shall show necessary modifications of owner, plumbing, electrical, and mechanical work required by the proposed materials and equipment.

B. Submittal – Product Data

1. Submit manufacturer's product data for all HVAC equipment, in compliance with specifications.

1.6 COOPERATION WITH OTHER TRADES

- A. Cooperate fully with other trades doing work on the project as may be necessary for the proper completion of the project. Refer to the Structural, Plumbing, and Electrical Drawings for details of the building structure and equipment installation that will tend to overlap, conflict with or require coordination with the work of this Section, and schedule this work accordingly.
- B. Any work done without regard for other trades shall be moved, replaced, or redone as required, without extra charges to Owner.

1.7 DIVISION OF WORK BETWEEN DIVISIONS 23 AND 26

- A. Close coordination between the electrical and mechanical trades is a part of the work that is required by this contract. No allowance will be made for omissions based on incorrectly assuming another trade will be performing your work. Confirm your scope of work with the general contractor.
- B. The division of responsibilities between trades supplying equipment in other Divisions may be different. For instance, Division 26 contractor may be required to supply disconnect switches and starters for non-HVAC mechanical equipment supplied under other Divisions.
- C. Division 23 Responsibilities
 1. Assume responsibility for the proper functioning of the HVAC systems in their entirety.
 2. Furnish and install all conductors and conduit required for control of HVAC equipment.
 3. Make all terminations with the exception of power conductors.
 4. Furnish and install all control panels and devices to provide a complete and functional controls system, including all controls transformers.

5. Furnish and install motor starters for all equipment specified in Division 23.
6. Install duct smoke detectors furnished by fire alarm contractor in buildings with fire alarm systems.
7. Furnish and install duct smoke detectors in buildings without fire alarm systems.
8. Furnish and install all control conductors and conduit connecting duct smoke detectors to smoke dampers and fan start controls.
9. All electrical work performed under Division 23 shall conform to the requirements of Division 26.

D. Division 26 Responsibilities

1. Furnish and install all raceways, conduit, disconnect switches, and conductors necessary for electrical power supply.
2. Make all power supply terminations to motors, starters, disconnect switches, control transformers, and other mechanical devices.
3. Fire alarm contractor to furnish duct smoke detectors in buildings with fire alarm systems.
4. Provide power to all duct smoke detectors and smoke dampers.
5. Coordinate all work with mechanical contractors.

1.8 AS-BUILT DRAWINGS

- A. A complete set of Contract Drawings shall be maintained at the work site, and all changes in the work shall be recorded on this set, on a daily basis. The final as-built drawings shall be submitted to the Architect for approval.

1.9 DESIGN DRAWINGS

- A. The drawings indicate diagrammatically the general layout of the mechanical systems and other related work. Field verification of scaled dimensions taken from the Drawings is required.
- B. The Contractor shall review and compare the Architectural, Structural, Plumbing, Mechanical, and Electrical Drawings and all Owner supplied equipment Drawings, and adjust their work to be in conformity with the conditions indicated thereon. Discrepancies between drawings, between drawings and actual field conditions, or between Drawings and Specifications, shall promptly be brought to the attention of the Architect for a determination of the modifications to be effected. In the event that a major modification is required, a Change Order will be prepared.

1.10 VERIFICATION OF EXISTING CONDITIONS AND DEMOLITION

- A. Before installation of any new work, verify the location, size, and other conditions at all points of connection to services or other existing piping, and at all locations where new work will cross or pass near existing piping, electrical, or other facilities.
- B. Remove ductwork, piping, controls, fixtures, and equipment that is not to remain in service as shown on the Drawings or as required. This included the removal of associated appurtenances and supports.
- C. Patch, cap, or repair existing works affected by this demolition in concealed spaces within six (6) inches of a live main or branch.
- D. Deliver removed material to the Owner as directed by the Architect. Dispose of all other removed material offsite.

- E. Information shown relative to existing services is based upon available records and data during preparation of the Drawings, but shall be verified. Make reasonable deviations found necessary to conform to actual locations and conditions, without extra charge.

1.11 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. Furnish three sets of typewritten instructions covering maintenance, adjustment, and operation of each piece of apparatus, bound in a hard cover loose-leaf binder. Neatly obscure or cross out inapplicable data from manufacturer's literature. Submit data to the Architect.
- B. Operating instructions shall show sequence of operations, lubrication, care, and maintenance requirements of all equipment. Final acceptance of the work will not be made until a satisfactory submission of this material is received and approved by the Architect.
- C. The Owner's authorized representative shall be instructed in the operation and servicing of all HVAC & plumbing systems.

1.12 ACCURACY OF DATA

- A. The data given herein and on the Drawings are as exact as could be reasonably secured, but absolute accuracy is not guaranteed. Exact locations, distances, elevations, etc. will be governed by shop drawings, the building itself, and actual field conditions.

1.13 DAMAGE BY LEAKS

- A. Contractor shall be responsible for any damage to work of other Contractors that is caused by leaks in any temporary or permanent piping systems due to pipe rupture, disconnected pipes or fittings, or by overflow of equipment.

1.14 SEISMIC FORCE RESISTANCE: MECHANICAL, PLUMBING, FIRE PROTECTION SYSTEMS

- A. All mechanical systems and plumbing piping systems shall adhere to the applicable OSHPD pre-approval, OPM# 0043.
- B. Contractor is required to submit shop drawings to the architect and the Division of State Architects (DSA) for review. The contractor shall proceed with the work only after review and acceptance by the architect and DSA. The contractor shall be responsible for ensuring adequate review time for coordination of the deferred submittal and adequate review time by the architect and DSA.
- C. All references to listed items on these drawings shall be used for bidding purposes only and shall not be used for construction. The responsibility for preparing and signing plans and specifications or report for the listed items may be delegated by the architect or structural engineer in general responsible charge, to a professional engineer registered in the appropriate branch of engineering.

1.15 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall be responsible for delivery, storage, protection, and placing of all equipment and materials.
 - 1. Contractor shall protect the work and materials from damage during construction. Equipment stored at the job site shall be protected from dust, water, or other damage, and be covered if equipment is exposed to weather. Protect interiors of new equipment and piping systems against entry of foreign matter. Clean both inside and outside before painting or placing equipment in operation.
 - 2. Any items damaged shall be repaired or replaced, at no additional cost to the Owner.

- B. Cleanliness of Piping and Equipment Systems
 - 1. Exercise care in storage and handling of equipment and piping material to be incorporated in the work. Remove debris arising from cutting, threading, and welding of piping.
 - 2. Piping systems shall be flushed, blown, or pigged as necessary to deliver clean systems.
 - 3. Contractor shall be fully responsible for all costs, damage, and delay arising from failure to provide clean systems.

1.16 WARRANTIES

- A. Equipment warranties shall be provided for all equipment, with all necessary information filled in, except purchase date, in favor of the Owner.
- B. The contractor shall guarantee that all work under this Section is free from defects in material and workmanship for a period of one year from the date of filing the Notice of Completion. Replacement of defective work and damage caused to work of other trades as a result of such defective work shall be the responsibility of the Contractor, and shall be made at no cost to the Owner.

1.17 SITE EXAMINATION

- A. Thoroughly examine the site and verify the actual work conditions. No extra compensation will be allowed for expenses due to failure to discover site conditions which affect the work.

PART 2 PRODUCTS

2.1 GENERAL

- A. All materials, appliances, and equipment shall be new and best of their respective kinds, free from defects, and of the make, brand, or quality specified or as accepted by the Architect.
- B. When two or more units of materials or equipment of the same type or class are required, these units shall be products of one manufacturer.
- C. Apply and install all items in accordance with manufacturer's written instructions. Refer conflicts between manufacturer's instructions and the contract drawings and specifications to the Architect for resolution.

2.2 CENTRIFUGAL EXHAUST FAN (EF-1)

- A. Greenheck SP, or approved equal, as scheduled on drawings
- B. Housing/Cabinet Construction
 - 1. Construction material: Aluminum
 - 2. Square design constructed of heavy gauge galvanized steel and shall include square duct mounting collars
 - 3. Housing and bearing supports shall be constructed of heavy gauge bolted and welded steel construction to prevent vibration and to rigidly support the shaft and bearing assembly.
- C. Wheel

1. Non-overloading, backward inclined centrifugal wheel
2. Constructed of aluminum
3. Statically and dynamically balanced in accordance to AMCA Standard 204-05
4. The wheel cone and fan inlet will be matched and shall have precise running tolerances for maximum performance and operating efficiency
5. Single thickness blades are securely riveted or welded to a heavy gauge back plate and wheel cone.

D. Electronically Commutated Motor

1. Motor enclosures: Open type
2. Motor to be a DC electronic commutation type motor (ECM) specifically designed fFOR fan applications. AC induction type motors are not acceptable. Examples of unacceptable motors are: Shaded Pole, Permanent Split Capacitor (PSC), Split Phase, Capacitor Start and 3 phase induction type motors.
3. Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase.
4. Internal motor circuitry to convert AC power supplied to the fan to DC power to operate the motor.
5. Motor shall be speed controllable down to 20% of full speed (80% turndown). Speed shall be controlled by either a potentiometer dial mounted at the motor or by a 0-10 VDC signal.
6. Motor shall be a minimum of 85% efficient at all speeds.

2.3 DUCTWORK

A. Sheet Metal Ductwork – Rectangular

1. Ducts and plenums shall be fabricated and installed in conformance with the latest editions of: NFPA Pamphlet No. 90A; California Building Code; California Mechanical Code and the SMACNA HVAC Duct Construction Standards (Metal and Flexible). Ducts and plenums shall be constructed of hot dipped galvanized mild steel and shall have airtight Class “B” seals at all transverse joints and longitudinal seams. Tables and figures hereinafter referenced are from the 2005 edition of the SMACNA HVAC Duct Construction Standards (Metal and Flexible).
2. Rectangular duct construction shall conform to Table 2-3. All transverse joints shall be flanged per Table 2-32, with corner closures or “Duct Mate” flanged connections with corner closures per Figure 2-17. Elbows shall be standard radius (Type RE 1) or square throat with vanes (Type RE 2) per Figure 4-2, with double thickness turning vanes per Figures 4-3 and 4-4. Offsets and transitions shall be per Figure 4-7. Supply, return, and exhaust branch connections shall be per Figure 4-5 or 4-6. Splitters shall not be used.
3. Lined ducts shall be fabricated such that the net inside dimensions equals the duct sizes shown on the Drawings.

B. Sheet Metal Ductwork – Spiral

1. Round ducts shall be spiral, United McGill or equal. All transverse joints and longitudinal seams shall have Class “B” seals. All branches in round duct systems shall be made with factory fabricated reducing wye branches. Duct turns shall be made with standard, factory fabricated, three-piece elbows.

C. Flexible Ductwork

1. Flexible ducts shall be Flexmaster “8M” or approved equal. Flexible ducts shall be used only where shown on the Drawings, and maximum length of any given flexible duct shall not exceed 5 ft. Galvanized sheet metal elbows shall be used for turns greater the 45° on flexible ducts 10” and larger. Connections to rectangular ducts shall

be made with "spin-in" fittings with air scoops. The installation of flexible ducts shall conform to Figure 3-10, with the exceptions noted herein.

D. Supports

1. Supports for horizontal ducts and plenums shall be fabricated per Figures 5-5 and 5-6 and Tables 5-1, 5-2, and 5-3. The maximum distance between hangers shall be eight feet for rectangular ducts and twelve feet for round ducts. Attachments to the structure shall be made with adequately sized lag bolts for straphangers and adequately sized machine bolts and side beam brackets for rod hangers. Supports for vertical ducts shall be band iron strap or angle bracket type per Figure 5-8 and 5-9.

E. Specialties:

1. Duct Access Doors: Including those for removing filters, duct access doors shall be as detailed in Figure 7-2 with sash locks, piano hinges, and gaskets. Access doors shall have an unobstructed full swing.

2.4 DUCTWORK ACCESSORIES

A. Flexible Duct Connections

1. Duro-Dyne "Metal-Fab" with Duroion, Ventfabrics "Ventglass," or approved equal.
2. Install at each point where a blower unit is connected to a duct. A minimum clearance of three inches between the duct and the source of vibration shall be maintained. Install per Figure 2-17.

B. Screens

1. Install removable bird screens at all outside intakes and exhaust air discharges. Screens shall be fabricated from 1/2" x 14 gauge mesh secured in full frames. Screens and frames shall be constructed of the same material as the duct, hood, or equipment to which attached.

C. Joints

1. Tape all joints airtight using Hardcast type "DT" pressureless tape and "HD-20" adhesive, per manufacturer's directions.

D. Dampers

1. Provide butterfly or multi-blade dampers where indicated on the Drawings or as required for balancing air quantities to values shown without generating excessive noise. Provide Duro-Dyne "KS-385," or approved equal, locking quadrants on each manual damper. Locate dampers in furred ceilings near access panels where possible.
 - a. Butterfly dampers shall be constructed as per Figure 7-4, Figure A, B, and C in the duct manual.
 - b. Multi-blade dampers shall conform to Figure 7-5.
 - c. Back-draft dampers shall be Air Balance "Air Dynamic" model DY-1002-V, or equal.
 - d. Add fire dampers and duct detectors at air handlers units over 2000 CFM

2.5 INSULATION

A. Exterior of Ductwork:

1. Unless specified to be lined, all sheet metal supply and return ducts in indirectly conditioned spaces shall be insulated on the outside with Johns Manville "Microlite XG" flexible fiberglass blanket-type duct wrap, with factory applied FSK aluminum foil facing, with a composite UL rating of 25/50, 2" thick, minimum R-6 installed.
2. Unless specified to be lined, all sheet metal supply and return ducts in unconditioned spaces shall be insulated on the outside with Johns Manville "Microlite XG" flexible

fiberglass blanket-type duct wrap, with factory applied FSK aluminum foil facing, with a composite UL rating of 25/50, 3" thick, minimum R-8 installed.

3. All outside air ductwork between building outside air inlet and HVAC unit shall be insulated on the outside with Johns Manville "Microlite XG" flexible fiberglass blanket-type duct wrap, with factory applied FSK aluminum foil facing, with a composite UL rating of 25/50, 1-1/2" thick, minimum R-4 installed.
4. Exhaust ductwork within 10 feet of termination point shall be insulated on the outside with Johns Manville "Microlite XG" flexible fiberglass blanket-type duct wrap, with factory applied FSK aluminum foil facing, with a composite UL rating of 25/50, 1-1/2" thick, minimum R-4 installed.

B. Interior of Ductwork:

1. Duct lining shall be installed in supply and return ducts and plenums where noted on the Drawings. Lining shall be Johns Manville "PermacoteLinacoustic R" rigid fiberglass board for plenums and "PermacoteLinacoustic HP" fiberglass duct liner for ducts, 1" thick, unless otherwise noted, with fire resistant coating. Duct liner shall meet ASTM C 1071, with air surface coated with acrylic coating treated with EPA registered anti-microbial agent prove to resist microbial growth as determined by ASTM G 21 and G 22. Insulation with torn or broken coating shall be removed and replaced. Loose corners, edges, and butt joints will not be accepted.
2. All exposed exterior supply and return ductwork shall have minimum 2" interior insulation, as specified in this section.
3. Maximum velocity: 5,000 ft/min.
4. Fasteners: duct liner galvanized steel pins, welded or mechanically fastened.
5. Developed smoke density shall not exceed 50. Flame spread rating shall not exceed 25.

2.6 REGISTERS, GRILLES, AND DIFFUSERS

- A. Air terminals shall be Titus, equivalent Nailor, or approved equal, as scheduled on the Drawings.
- B. All terminals shall be steel and shall be factory painted "off-white," unless otherwise noted. Air terminals for installation in gypsum board shall have a 1" border for surface mounting.

2.7 ACCESS PANELS

- A. Where construction is not inherently accessible, provide adequately sized and conveniently located access doors in ceilings, walls, and furring for servicing valves, equipment, etc. Doors shall be delivered to the General Contractor for installation.
- B. Fire Rated: Inryco/Milcor, U.L. listed, "B" label, 1 ½ hour rating. Minimum size shall be 12" x 12". Provide larger sizes where required. Locks shall be flush screwdriver operated.
- C. Drywalled Surfaces: Inryco/Milcor, Style DW, prime coated steel. Minimum size shall be 12" x 12". Provide larger sizes where required. Locks shall be flush screwdriver operated.
- D. Concrete and Tiled Surfaces: Inryco/Milcor, Style M, prime coated steel, except access panels installed in tiled surfaces shall be stain finish stainless steel. Minimum size shall be 12" x 12". Provide larger sizes where required. Locks shall be flush screwdriver operated.
- E. Plastered Surfaces: Inryco/Milcor, Style K, prime coated steel. Minimum size shall be 12" x 12". Provide larger sizes where required. Locks shall be flush screwdriver operated.

PART 3 EXECUTION**3.1 INSTALLATION, GENERAL**

- A. Provide all necessary cutting in connection with the work of the Section. No cutting shall be done without the approval of the Architect. Comply with requirements specified in Cutting and Patching Section.
- B. No structural members shall be drilled, bored, or notched in a manner that will impair their structural capacity.
- C. All penetrations of concrete or masonry shall be made with core drills.

3.2 EQUIPMENT STARTUP

- A. Notify the Owner's representative a minimum of two weeks prior to equipment startup date to allow for Owner's personnel to be present during startup.
- B. Manufacturer must provide a service technician to supervise rigging of the units to ensure proper fit.
- C. Unit must be checked out, tested and placed into operation by the installing contractor under the supervision of an authorized representative of the factory.
- D. Controls contractor must be present during startup to ensure that factory-installed controls have been adequately installed, wired, and integrated into the building managements system.
- E. Provide minimum eight (8) hours of training time with Owner's maintenance personnel to thoroughly review new equipment, maintenance requirements, and equipment controls.
- F. During startup, the full functionality of the equipment shall be demonstrated to the satisfaction of the Owner's representative, including heating, mechanical cooling, economizer cooling, zone modulation, and all emergency shutdown features.

3.3 EQUIPMENT, GENERAL REQUIREMENTS

- A. Equipment shall operate quietly and without objectionable vibration. Such problems, other than from equipment operating at optimum conditions, shall be the Contractor's responsibility and shall be eliminated at the direction of the Architect.
- B. Install equipment to provide good appearance, easy access, and adequate space to allow replacement and maintenance. Provide bases, supports, anchor bolts, and other items required to achieve this. Installation shall be level, above moisture level, and adequately braced.
- C. Thoroughly lubricate equipment before operating. Repair of damage resulting from failure to comply with this requirement shall be the Contractor's responsibility.
- D. Connections to piping shall be secured and properly aligned and all utility and control connections shall be properly isolated from the building structure by means of vibration isolators and flexible connections. Any equipment not meeting this requirement will be modified and reinstalled at no expense to the Owner.

- E. Move equipment into building through available openings. Dismantle equipment where necessary to accomplish this. After reassembly, test equipment to verify its satisfactory operating condition.

3.4 DUCTWORK

- A. All ductwork shall be installed within spaces provided where possible. Ducts shall be installed true to line and grade, fully secured to structural framing with specified hangers and supports, insulated, and vibration isolated, where required.
- B. Each section of supply air ductwork shall be cleaned at the shop, dust and oil free, using a degreasing agent and detergent and sealed airtight at both ends with visqueen and tape. Supply ducts shall be additionally cleaned with a disinfecting solution. Ends of all supply and internally insulated exhaust ducts shall be kept sealed until the time they are jointed. When duct sections are joined, wipe down all interior surfaces with a clean tack cloth. If tack cloth shows any dust, then re-clean duct as described above. The intent is that no foreign matter be allowed to enter the ductwork at any time after factory cleaning and during construction.

3.5 CONTROLS

- A. This Contractor shall provide all required control components, including but not limited to thermostats, temperature sensors, static pressure sensors, humidity sensors, damper actuators, valve actuators, unitary controllers, relays, and low-voltage wiring, such that the Owner is provided with a fully functional control system.
- B. Where work is performed in an existing building, this Contractor shall integrate all control modifications into the existing building control system, if applicable. Specific requirements shall be coordinated with Owner and approved by Architect prior to installation.
- C. Installation of the system shall be made under the supervision of the manufacturer of the equipment, or his factory authorized representative.
- D. In addition to the submittals required above, and those set forth in "Submittals," the following items shall be furnished.
 - 1. In an existing building, this Contractor shall furnish a document that describes the proposed materials methods for integration into the existing building management system, if applicable.
 - 2. Prior to final inspection, the system contractor shall furnish a letter stating that the entire control system and all interlock wiring is installed and operating in a satisfactory manner.

3.6 INSULATION

- A. Exterior Ductwork:
 - 1. The insulation shall be cut longer than the perimeter of the duct to provide 2" staple lap and minimum compression at the corners. All joints shall be lapped 2" and stapled with outward clinching staples 2" on center. The insulation shall be mechanically fastened to the underside of all ducts 24" wide or more using cup-head pins, weld pins, or stick pins with speed clips 18" on center. All joints and penetrations of the vapor barrier jacket shall be sealed with a minimum 3" wide matching pressure sensitive tape. Pressure-sensitive tape shall be firmly rubbed in place immediately after application using a "squeegee" type tool.
 - 2. When a vapor seal is required, two coats of vapor retarder mastic reinforced with one layer of 4" wide, open weave glass fabric may be used in lieu of pressure-sensitive

tape. Mastic shall be brushed onto joint and glass fabric until the fabric is filled. Mastics shall be applied in accordance with application instructions on the container.

- B. Interior Duct Liner
 - 1. Apply to the inside face of ducts, coated side facing air stream, fasten using fire retardant adhesive meeting ASTM C 9169, and secure with mechanical liner fasteners at 24" maximum o.c., both directions. Pin length should be such as to limit compression of liner.
 - 2. Exposed edges must be factory or field coated. For systems operating at 4000 fpm or higher, a metal nosing must be installed on all liner leading edges. Insulation with torn or broken coatings shall be removed or replaced. Loose corners, edges, and butt joints will not be accepted.

3.7 REFRIGERANT PIPING

- A. Piping shall be continuously purged with dry nitrogen while soldering. Care shall be taken when soldering near valves or other equipment that may be damaged by extreme heat.
- B. Refrigerant piping shall be tested for leaks under 500 psig pressure using an inert gas such as dry nitrogen. Joints shall be tested for leaks using soapsuds. (WARNING! OXYGEN OR ACETYLENE SHALL NOT BE USED IN PLACE OF DRY NITROGEN. A VIOLENT EXPLOSION MAY RESULT!). Be sure that all controls, relief valves, or rupture discs that could be damaged by test pressure are removed before beginning pressure test.
- C. Pressure and leak tests on refrigerant piping and equipment shall be done in accordance with local code requirements and the American Standard Safety Code for Mechanical Refrigeration (ASA B9.1).
- D. Pressure Testing Requirements:
 - 1. A three-step pressure test shall be performed per the following:
 - a. Step 1 – Leak check at 149 psi for a minimum of 3 minutes.
 - b. Step 2 - Leak check at 312 psi for a minimum of 5 minutes.
 - c. Step 3 – Leak check at 550 psi for a minimum of 24 hours.
- E. Evacuation Requirements:
 - 1. The contractor shall notify the Architect 48 hours prior to the time and date of the evacuation.
 - 2. A vacuum pump specifically designed for use with R-410A shall be used to triple-evacuate the system per the following procedure:
 - a. Step 1 – Evacuate the system to 29" mercury and maintain for 20 minutes.
 - b. Step 2 – Break vacuum with dry nitrogen to a pressure of 2-3 psi and maintain for 15 minutes.
 - c. Step 3 – Evacuate the system to 29" mercury and maintain for 20 minutes.
 - d. Step 4 – Break vacuum with dry nitrogen to a pressure of 2-3 psi and maintain for 15 minutes.
 - e. Step 5 - Evacuate the system to 29" mercury and maintain for 20 minutes.
- F. The refrigerant charge shall be calculated and weighed into the system.
- G. After charging with refrigerant, all joints shall be tested with an electric halide leak detector. Precautions should be taken to keep moisture out of the system, and a drier shall be used.
- H. Service technicians shall be certified in the use of CFC and HCFC refrigerant recovery and recycling equipment and he/she shall use UL listed and labeled recovery equipment when discharging refrigerant.

3.8 TEST, INSPECTIONS

- A. Make all necessary control adjustments and balancing of air and water flows. Operate the entire system for a period of time not less than three (3) working days for the purpose of proving satisfactory performance. During this period, instruct such persons as the Owner and/or Architect may designate in the proper operation of the systems. Should further adjustment prove necessary, operating tests shall be repeated until a satisfactory test is obtained.
- B. This Contractor shall not allow or cause any work of this Section to be covered or enclosed until it has been inspected, tested, and approved by the Architect and the authorities having jurisdiction over the work. Should any of this work be enclosed or covered up before such inspection, testing, and approval, this Contractor shall uncover the work, have the necessary inspections, tests, and approvals made and, at no expense to the Owner, make all repairs necessary to restore both his work and that of other contractors which may have been damaged to be in conformity with the Contract Documents.

3.9 CLEANUP

- A. Upon completion of the work of this Section, remove all material, debris, and equipment associated with or used in the performance of this work.

END OF SECTION

PART 1 GENERAL

1.1 SCOPE

- A. Provide all supervision, personnel, instruments, calibration, equipment, and all other materials necessary to perform balancing and testing, and compile test data including calculations and services necessary for the heating, ventilating, and air conditioning systems for this project, all in accordance with the project Drawings and Specifications and as specified herein.

1.2 GENERAL

- A. Mechanical Contractor will employ a Testing, Adjusting, and Balancing (TAB) Agency that is certified by Associated Air Balancing Council (AABC), National Environmental Balancing Bureau (NEBB), or Testing, Adjusting, and Balancing Bureau (TABB).
- B. The TAB Agency shall be responsible for inspecting, balancing, adjusting, testing, and logging the data of the performance of fans, all dampers in the duct systems, all air distribution devices, and the flows of water through all coils.
- C. Existing equipment, unless specifically mentioned otherwise, shall not in the scope of the TAB work.
- D. A completely operable system shall be placed into operation each day during testing and balancing.
- E. The TAB Agency shall utilize instrumentation which meets the requirements of ASHRAE 111, Section 5, "Instrumentation".
- F. The Mechanical Contractor shall be responsible for certifying in writing that the system, as scheduled for balancing, is operational and complete. Completeness shall include not only the physical installation, but the Mechanical Contractor's certification that the prime movers are installed in good working order, and that full load performance has been preliminary tested under the certification of the Mechanical Contractor. Before any testing and balancing is started, a complete report shall be sent to the TAB Agency by the Mechanical Contractor.
- G. The Mechanical Contractor shall be responsible for making all modifications to recertify discrepancies reported by the TAB Contractor as indicating non-compliance with the Contract Documents. By completing the work on time, the Mechanical Contractor shall provide sufficient time before the completion date so that balancing can be accomplished.
- H. If construction deficiencies are encountered which preclude obtaining optimum conditions, the deficiencies will be recorded and given to the Owner's representative. The TAB Agency is advised that deficiencies in the HVAC construction are often encountered during final TAB services, and should include in the bid an amount deemed advisable to compensate for time in identifying the deficiencies.

1.3 SERVICES

- A. The TAB Agency will balance, test, and adjust the systemic components to obtain optimum conditions in each conditioned space in the building. If construction deficiencies are encountered which preclude obtaining optimum conditions, the deficiencies will be recorded and given to the Owner's representative. The TAB Agency is advised that deficiencies in the HVAC construction are often encountered during final TAB services, and should include in the bid an amount deemed advisable to compensate for time in identifying the deficiencies.

- B. The report shall be complete with logs, data, and records as required herein and all logs, data, and records shall be typed, produced, on white bond paper, and bound. Transmit four copies directly to the Owner's Representative to be distributed to the Mechanical Contractor, Controls Contractor, Engineer, and record file.
- C. The report shall contain the following general data in a format selected by the TAB Agency for clarity and ease of reference.
 - 1. Project Title.
 - 2. Project Location.
 - 3. Project Architect (Firm name and address).
 - 4. Project Mechanical Engineer (Name).
 - 5. TAB Field Test Engineer (Name).
 - 6. TAB Agency (Firm name and address).
 - 7. Inclusive dates tests were performed and date of report.
 - 8. Calibration Certificates of each instrument used along with specific ID numbers (i.e., serial numbers).

1.4 SUBMITTALS

- A. Submittal No. 15950 (1) – TAB Agenda
 - 1. The TAB Contractor shall submit a complete agenda, which shall outline in full the testing methods and locations for each HVAC system and/or device that is within the scope of the TAB work. The agenda shall represent the total system balance report, less field test data. Areas of intended field test inputs shall be represented by fully labeled blank spaces.
 - 2. The TAB Agenda shall also indicate the proposed test methods, instrumentation devices and all applicable calibration certificates.
- B. Submittal No 15950 (2) – TAB Report
 - 1. Provide Test and Balance Report as indicated herein.

1.5 AIR SYSTEMS REQUIREMENTS

- A. In addition to the above data in its appropriate format, the Test and Balance Report shall include the following data:
 - 1. Exhaust Fans
 - a. Manufacturer and model.
 - b. Size.
 - c. Motor hp, voltage, phase, cycles, full load amps.
 - d. Location and local identification data.
 - e. Identification tag listed in schedules on drawings and specifications.
 - f. Exhaust airflow (cfm).
 - g. Fan RPM.
 - h. Motor current readings at each fan.

PART 2 – PRODUCTS (not used)

PART 3 – EXECUTION

3.1 GENERAL PROCEDURES

- A. During the balancing, the temperature regulation shall be adjusted for proper relationship between controlling instruments and calibrated. The correctness of the final setting shall be

proved by taking hourly readings for a period of one successive 8-hour day, in a typical room on each separately controlled zone, after tenant moves in. The total variation shall not exceed 2 degrees from the preset medium temperature during the temperature survey period. (This will be done only on systems that are totally operational).

3.2 AIR SYSTEMS PROCEDURES

- A. The TAB Agency shall perform the following tests and balance the air systems in accordance with the following requirements:
1. Test and adjust blower and motor rpm to design requirements.
 2. Test and record motor full load amperes and corresponding voltage.
 3. Make pitot tube traverse of main supply ducts and obtain design cfm at fans.
 4. Test and record system static pressures, suction and discharge.
 5. Test and adjust system for design cfm of outside air.
 6. Test and record entering and leaving air dry bulb temperatures of all heating and cooling coils.
 7. Test and record entering and leaving wet bulb temperatures of all cooling coils.
 8. Adjust all main supply and return air ducts to proper design cfm. System supply airflow, system return airflow, and system outdoor airflow shall be balanced to within 5% of the design requirement.
 9. Adjust all zones to proper design cfm, supply and return.
 10. Test and adjust each diffuser, grille, and register to within 10% of design requirement.
 11. Each grille, diffuser, and register shall be identified as to location and area.
 12. Size, type, and manufacturer of diffusers, grilles, registers, and all tested equipment shall be identified and listed. Manufacturer's ratings on all equipment shall be used to make required calculations.
 13. Readings and test of diffusers, grilles, and registers shall include required fpm velocity and test resultant velocity, required cfm and test resultant cfm after adjustments.
 14. TAB Agency shall check all controls to ensure they are operating as specified. Provide the control contractor with specific set points.

3.3 TEMPERATURE CONTROL SYSTEM

- A. In the progress of performing the TAB work, the TAB Agency shall:
1. Work with the Controls Contractor to ensure the most effective total system operation within the design limitations, and to obtain mutual understanding of intended control performance.
 2. Verify that all control devices are properly connected.
 3. Verify that all dampers, valves, and other controlled devices are operated by the intended controller.
 4. Verify that all dampers and valves are in the position indicated by the controller (open, closed, or modulating).
 5. Verify that the integrity of valves and dampers in terms of tightness of close-off and full-open position. This includes dampers in multi-zone units.
 6. Check that all valves are properly installed in the piping system in relation to direction of flow and location.
 7. Verify the calibration of all controllers.
 8. Verify the proper application of all normally open and normally closed valves.
 9. Check the locations of all thermostats and humidistats for potential erratic operation from outside influences such as sunlight, drafts, or cold walls.
 10. Check the locations of all sensors to determine whether their position will allow them to sense only the intended temperatures or pressures of the media. Controls Contractor will relocate as deemed necessary by the TAB Agency.
 11. Check the sequence of operation for any control mode is in accordance with approved shop drawings. Verify that only minimum simultaneous heating and cooling occurs.

Observe that heating cannot take place until the cooling zone of valve is completely closed.

12. Verify that all controller set points meet the design intent.
13. Check all dampers for free travel.
14. Verify the operation of all interlock systems.
15. Perform all system verification to assure the safety of the system and its components.

B. A systematic check of the above requirements shall be included in the final TAB report.

3.4 DUCT LEAKAGE TEST

- A. All supply, return, exhaust, and outside air ductwork shall be tested for leaks, using necessary instruments before insulating any ductwork.
- B. Ductwork shall be leak-tested in accordance with SMACNA HVAC Air Duct Leakage Test Manual. Representative sections totaling not less than 10 percent of the total installed duct area shall be tested. Where the tested 10 percent fails to comply with the requirements of this section, then 40 percent of the total installed duct area shall be tested. Where the tested 40 percent fails to comply with the requirements of this section, then 100 percent of the total installed duct area shall be tested.
- C. The maximum permitted leakage shall be determined in accordance with CMC 603.10.1.
- D. The test and balance report shall include the results of the duct leakage test for the engineer's review.

3.5 TEST AND BALANCE REPORT

- A. The report shall contain the following data:
 1. A listing of the measured air quantities at each outlet corresponding to the temperature tabulation specified above.
 2. Air quantities at each return and exhaust air handling device (only if ducted return systems).
 3. Static pressure readings entering and leaving each supply, return and exhaust fan, filter, and coil of the system. These readings shall be related to fan curves in terms of cfm handled.
 4. Water pressure readings at gauge connections. Pressure readings at coils and pumps shall be related to coils and pump curves in terms of gpm handled.
 5. Motor current readings at each fan and pump. The voltages at the time of the readings shall be listed.

3.6 FINAL ACCEPTANCE

- A. At the time of final inspection, the Balancing Agency shall recheck, in the presence of the Owner's Representative, specific and random selections of data, i.e., water and air quantities, recorded in the Certified Report.
- B. Points and areas for recheck shall be selected by the Owner's Representative.
- C. Measurement and test procedures shall be the same as approved for work forming basis of Certified Report.
- D. Selections for recheck, specific plus random, will not normally exceed 25% of the total number tabulated in the report, except that special air systems may require a complete recheck for safety reasons.

- E. If random tests elicit a measured flow deviation of 10% or more from that recorded in the Certified Report on 10% or more of the selected recheck stations, the report shall be automatically rejected. In the event the report is rejected, all systems shall be readjusted and tested, new data recorded, new Certified Report submitted, and new inspection tests made, all at no additional cost to the Owner.
- F. Following final acceptance of the Certified Report by the Owner's Representative, the settings of all valves, splitter, dampers, and other adjustment devices shall be permanently marked by the TAB Agency, so that adjustment can be restored if disturbed at any time. Devices shall not be marked until after final acceptance.

END OF SECTION

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Copper building wire rated 600 V or less.
 - 2. Metal-clad cable, Type MC, rated 600 V or less.
 - 3. Connectors, splices, and terminations rated 600 V and less.

1.3 DEFINITIONS

- A. RoHS: Restriction of Hazardous Substances.
- B. VFC: Variable-frequency controller.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Schedule: Indicate type, use, location, and termination locations.

PART 2 - PRODUCTS

2.1 COPPER BUILDING WIRE

- A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.
- B. Standards:
 - 1. Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and use.
 - 2. RoHS compliant.
 - 3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- C. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.
- D. Conductor Insulation: Type THHN and Type THWN-2: Comply with UL 83.

2.2 METAL-CLAD CABLE, TYPE MC

- A. Description: A factory assembly of one or more current-carrying insulated conductors in an overall metallic sheath.
- B. Standards:
 - 1. Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and use.
 - 2. Comply with UL 1569.

3. RoHS compliant.
 4. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."
- C. Circuits:
1. Single circuit with color-coded conductors.
 2. Power-Limited Fire-Alarm Circuits: Comply with UL 1424.
- D. Conductors: Copper, complying with ASTM B3 for bare annealed copper and with ASTM B8 for stranded conductors.
- E. Ground Conductor: Insulated
- F. Conductor Insulation: Type THHN/THWN-2: Comply with UL 83.
- G. Armor: Aluminum, interlocked.
- H. Jacket: PVC applied over armor.

2.3 CONNECTORS AND SPLICES

- A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and use.
- B. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.
- C. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.
1. Material: Copper.
 2. Type: Two hole with standard barrels.
 3. Termination: Compression.

PART 3 – EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Feeders: Copper for feeders smaller than No. 4 AWG; copper or aluminum for feeders No. 4 AWG and larger. Conductors shall be solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- C. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- D. Branch Circuits: Copper. Solid for No. 12 AWG and smaller; stranded for No. 10 AWG and larger.
- E. Power-Limited Fire Alarm and Control: Solid for No. 12 AWG and smaller.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

SECTION 26 05 19
LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

- A. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.
- B. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN/THWN-2, single conductors in raceway.
- C. Feeders Installed below Raised Flooring: Type THHN/THWN-2, single conductors in raceway.
- F. Exposed Branch Circuits, Including in Crawlspace: Type THHN/THWN-2, single conductors in raceway.
- G. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway.
- H. Branch Circuits Installed below Raised Flooring: Type THHN/THWN-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.
- B. Complete raceway installation between conductor and cable termination points according to Section 26 05 33 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.
- C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips that will not damage cables or raceway.
- E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- F. Support cables according to Section 26 05 29 "Hangers and Supports for Electrical Systems."
- G. Complete cable tray systems installation according to Section 26 05 36 "Cable Trays for Electrical Systems" prior to installing conductors and cables.

3.4 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
 - 1. Use oxide inhibitor in each splice, termination, and tap for aluminum conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 12 inches of slack.

3.5 IDENTIFICATION

SECTION 26 05 19
LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

- A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."
- B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

3.6 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Section 07 84 13 "Penetration Firestopping."

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform tests and inspections with the assistance of a factory-authorized service representative.
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
 - 2. Perform each of the following visual and electrical tests:
 - a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
 - b. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500-V dc for 300-V rated cable and 1000-V dc for 600-V rated cable for a one-minute duration.
- C. Cables will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports to record the following:
 - 1. Procedures used.
 - 2. Results that comply with requirements.
 - 3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes grounding and bonding systems and equipment.

1.2 BONDING AND EQUIPMENT GROUNDING

- A. Description of System: In general, all electrical equipment (metallic conduit, motor frames, panelboards, etc.) shall be bonded together with a green insulated copper system grounding conductor in accordance with specific rules of Article 250 of the CEC. Equipment grounding conductors through the raceway system shall be continuous from main switch ground bus to panel ground bar of each panelboard, and from panel grounding bar of each panelboard to branch circuit equipment and devices.
- B. Equipment Grounding Conductors: All raceways shall have an insulated copper system ground conductor run throughout the entire length of the circuit installed within conduit in strict accordance with CEC. Grounding conductor shall be included in total conduit fill when determining conduit sizes, even though not included or shown on drawings.
- C. Redundant Grounding: In general all branch circuits shall be provided with a redundant grounding system through the use of grounding conductors and metallic conduit.
- D. Bonding: In addition to connections to grounding electrodes, the main service ground shall be bonded to the lightning protection system and other underground metal piping.
- E. Light Poles: All exterior light poles shall have their enclosures grounded directly to a separate driven ground at the light pole in addition to the building ground connection, via the circuit equipment ground conductor.
- F. Bushings: Provide insulated grounding bushings on all metallic feeder conduits terminated within panelboards, switchboards or enclosed overcurrent devices. Provide insulated grounding bushings on all branch circuit conduits where concentric knockouts are used.
- G. Connection to Other Systems: Provide all required grounding and bonding connections as specified herein and as required by the National Electrical Code.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For testing agency and testing agency's field supervisor.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.
- B. Comply with UL 467 for grounding and bonding materials and equipment.

2.2 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 4 inches in cross section, with 9/32-inch holes spaced 1-1/8 inches apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V and shall be Lexan or PVC, impulse tested at 5000 V.
- D. Lead Content: Less than 300 parts per million.

2.3 CONNECTORS

- A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to the ground bus bar.
- C. Bus-Bar Connectors: Compression type, copper or copper alloy, with two wire terminals.
- D. Cable-to-Cable Connectors: Compression type, copper or copper alloy.

PART 3 - EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger unless otherwise indicated.
- B. Grounding Bus: Install in electrical equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
 - 1. Install bus horizontally, on insulated spacers 2 inches minimum from wall, 6 inches above finished floor unless otherwise indicated.
 - 2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, and down; connect to horizontal bus.
- C. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by CEC:
 - 1. Feeders and branch circuits.
 - 2. Lighting circuits.
 - 3. Receptacle circuits.
 - 4. Single-phase motor and appliance branch circuits.
 - 5. Three-phase motor and appliance branch circuits.
 - 6. Flexible raceway runs.
 - 7. Armored and metal-clad cable runs.
 - 8. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

3.6 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
 - 1. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
- B. Tests and Inspections:
 - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
 - 2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
- C. Grounding system will be considered defective if it does not pass tests and inspections.
- D. Report measured ground resistances that exceed the following values:
 - 1. Power and Lighting Equipment or System with Capacity of 500 kVA and Less: 10 ohms.
 - 2. Power and Lighting Equipment or System with Capacity of 500 to 1000 kVA: 5 ohms.
 - 3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
 - 4. Power Distribution Units or Panelboards Serving Electronic Equipment: 1 ohm(s).
 - 5. Substations and Pad-Mounted Equipment: 5 ohms.
 - 6. Manhole Grounds: 10 ohms.
- I. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Steel slotted support systems.
 - 2. Conduit and cable support devices.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Hangers and supports shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
 - 1. The term "withstand" means "the supported equipment and systems will remain in place without separation of any parts when subjected to the seismic forces specified and the supported equipment and systems will be fully operational after the seismic event."

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Preformed steel channels and angles with minimum 13/32-inch- diameter holes at a maximum of 8 inches o.c. in at least one surface.
 - 1. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.
 - 2. Material for Channel, Fittings, and Accessories: Stainless steel, Type 316.
 - 3. Channel Width: Selected for applicable load criteria.
 - 4. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 5. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
 - 6. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA- 4.
 - 7. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with the following standards for application and installation requirements of hangers and supports, except where requirements on Drawings or in this Section are stricter:
 - 1. CECA 1.
 - 2. CECA 101
- B. Comply with requirements for raceways and boxes specified in Section 26 05 33 "Raceways and Boxes for Electrical Systems."
- C. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and RMC as required by CEC. Minimum rod size shall be 1/4 inch in diameter.

- D. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.2 SUPPORT INSTALLATION

- A. Comply with CECA 1 and CECA 101 for installation requirements except as specified in this article.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
 - 6. To Light Steel: Sheet metal screws.
 - 7. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- B. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Metal conduits and fittings.
 2. Nonmetallic conduits and fittings.
 3. Boxes, enclosures, and cabinets.

1.2 ACTION SUBMITTALS

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, and attachment details.
- C. Samples: For wireways and for each color and texture specified, 12 inches long.

PART 2 - PRODUCTS

2.2 METAL CONDUITS AND FITTINGS

- A. Metal Conduit:
1. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 2. GRC: Comply with ANSI C80.1 and UL 6.
 3. IMC: Comply with ANSI C80.6 and UL 1242.
 4. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.
 5. Comply with NEMA RN 1.
 6. Coating Thickness: 0.040 inch, minimum.
 7. EMT: Comply with ANSI C80.3 and UL 797.
 8. FMC: Comply with UL 1; zinc-coated steel.
 9. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.
- B. Metal Fittings:
1. Comply with NEMA FB 1 and UL 514B.
 2. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 3. Fittings, General: Listed and labeled for type of conduit, location, and use.
 4. Fittings for EMT:
 5. Material: Steel.
 6. Type: Setscrew.
 7. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.
 8. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch, with overlapping sleeves protecting threaded joints.
- C. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.3 NONMETALLIC CONDUITS AND FITTINGS

- A. Nonmetallic Conduit:
1. Listing and Labeling: Nonmetallic conduit shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 2. Fiberglass:
 - a. Comply with NEMA TC 14.
 - b. Comply with UL 2515 for aboveground raceways.
 - c. Comply with UL 2420 for belowground raceways.
 3. ENT: Comply with NEMA TC 13 and UL 1653.
 4. RNC: Type EPC-40-PVC, complying with NEMA TC 2 and UL 651 unless otherwise indicated.
 5. LFNC: Comply with UL 1660.
 6. Rigid HDPE: Comply with UL 651A.
 7. Continuous HDPE: Comply with UL 651A.
 8. RTRC: Comply with UL 2515A and NEMA TC 14.
- B. Nonmetallic Fittings:
1. Fittings, General: Listed and labeled for type of conduit, location, and use.
 2. Fittings for ENT and RNC: Comply with NEMA TC 3; match to conduit or tubing type and material.
 - a. Fittings for LFNC: Comply with UL 514B.
 3. Solvents and Adhesives: As recommended by conduit manufacturer.
 4. Adhesive shall comply with the testing and product requirements of the California Department of Public Health's "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

2.4 BOXES, ENCLOSURES, AND CABINETS

- A. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.
- B. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.
- C. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, aluminum, Type FD, with gasketed cover.
- D. Nonmetallic Outlet and Device Boxes: Comply with NEMA OS 2 and UL 514C.
- E. Metal Floor Boxes:
1. Material: Cast metal or sheet metal.
 2. Type: Fully adjustable.
 3. Shape: Rectangular.
 4. Listing and Labeling: Metal floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- F. Nonmetallic Floor Boxes: Nonadjustable, round.
1. Listing and Labeling: Nonmetallic floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- G. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb. Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.

- H. Paddle Fan Outlet Boxes: Nonadjustable, designed for attachment of paddle fan weighing 70 lb.
 - 1. Listing and Labeling: Paddle fan outlet boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- I. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- J. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum with gasketed cover.
- K. Box extensions used to accommodate new building finishes shall be of same material as recessed box.
- L. Device Box Dimensions: 4 inches square by 2-1/8 inches deep.
- M. Gangable boxes are allowed.
- N. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 1 with continuous-hinge cover with flush latch unless otherwise indicated.
 - 1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
 - 2. Nonmetallic Enclosures: Fiberglass.
 - 3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.
- O. Cabinets:
 - 1. NEMA 250, Type 1 galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 - 2. Hinged door in front cover with flush latch and concealed hinge.
 - 3. Key latch to match panelboards.
 - 4. Metal barriers to separate wiring of different systems and voltage.
 - 5. Accessory feet where required for freestanding equipment.
 - 6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.5 SOURCE QUALITY CONTROL FOR UNDERGROUND ENCLOSURES

- A. Handhole and Pull-Box Prototype Test: Test prototypes of handholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
 - 1. Strength tests of complete boxes and covers shall be by either an independent testing agency or manufacturer. A qualified registered professional engineer shall certify tests by manufacturer.
 - 2. Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012 and traceable to NIST standards.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

- A. Indoors: Apply raceway products as specified below unless otherwise indicated:
 - 1. Exposed, Not Subject to Physical Damage: EMT.
 - 2. Exposed, Not Subject to Severe Physical Damage: EMT.

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3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 4. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.
- B. Minimum Raceway Size: 1/2-inch trade size.
- C. Raceway Fittings: Compatible with raceways and suitable for use and location.
1. EMT: Use setscrew, steel fittings. Comply with NEMA FB 2.10.
 2. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.
- D. Install surface raceways only where indicated on Drawings.
- E. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F.

3.2 INSTALLATION

- A. Comply with requirements in Section 26 05 29 "Hangers and Supports for Electrical Systems" for hangers and supports.
- B. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.
- C. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- D. Complete raceway installation before starting conductor installation.
- E. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches of changes in direction.
- F. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.
- G. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.
- H. Support conduit within 12 inches of enclosures to which attached.
- I. Stub-ups to Above Recessed Ceilings:
1. Use EMT, IMC, or RMC for raceways.
 2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.
- J. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.
- K. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous groundpath.

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- L. Cut conduit perpendicular to the length. For conduits 2-inch trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.
- M. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.
- N. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.
- O. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.
- P. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.
- Q. Set metal floor boxes level and flush with finished floor surface.

3.3 PROTECTION

- A. Protect coatings, finishes, and cabinets from damage and deterioration.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Color and legend requirements for raceways, conductors, and warning labels and signs.
 - 2. Labels.
 - 3. Bands and tubes.
 - 4. Tapes and stencils.
 - 5. Tags.
 - 6. Signs.
 - 7. Cable ties.
 - 8. Paint for identification.
 - 9. Fasteners for labels and signs.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for electrical identification products.
- B. Samples: For each type of label and sign to illustrate composition, size, colors, lettering style, mounting provisions, and graphic features of identification products.
- C. Identification Schedule: For each piece of electrical equipment and electrical system components to be an index of nomenclature for electrical equipment and system components used in identification signs and labels. Use same designations indicated on Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with 2022 CEC.
- B. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- C. Comply with ANSI Z535.4 for safety signs and labels.
- D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.
- E. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 COLOR AND LEGEND REQUIREMENTS

- A. Raceways and Cables Carrying Circuits at 600 V or Less:
 - 1. Black letters on an orange field.
 - 2. Legend: Indicate voltage and system or service type.
- B. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.

1. Color shall be factory applied or field applied for sizes larger than No. 8 AWG if authorities having jurisdiction permit.
 2. Colors for 208/120-V Circuits:
 - a. Phase A: Black.
 - b. Phase B: Red.
 - c. Phase C: Blue.
 3. Color for Neutral: White.
 4. Color for Equipment Grounds: Bare copper.
- C. Warning Label Colors:
1. Identify system voltage with black letters on an orange background.
- D. Warning labels and signs shall include, but are not limited to, the following legends:
1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
 2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."
- E. Equipment Identification Labels:
1. Black letters on a white field.

2.3 LABELS

- A. Vinyl Wraparound Labels: Preprinted, flexible labels laminated with a clear, weather- and chemical-resistant coating and matching wraparound clear adhesive tape for securing label ends.
- B. Snap-around Labels: Slit, pre-tensioned, flexible, preprinted, color-coded acrylic sleeves, with diameters sized to suit diameters and that stay in place by gripping action.
- C. Self-Adhesive Wraparound Labels: Preprinted, 3-mil-thick, polyester flexible label with acrylic pressure-sensitive adhesive.
 1. Self-Lamination: Clear; UV-, weather- and chemical-resistant; self-laminating, protective shield over the legend. Labels sized such that the clear shield overlaps the entire printed legend.
 2. Marker for Labels: Machine-printed, permanent, waterproof, black ink recommended by printer manufacturer.
- D. Self-Adhesive Labels: Polyester, thermal, transfer-printed, 3-mil-thick, multicolor, weather- and UV-resistant, pressure-sensitive adhesive labels, configured for intended use and location.
 1. Minimum Nominal Size:
 - a. 1-1/2 by 6 inches for raceway and conductors.
 - b. 3-1/2 by 5 inches for equipment.
 - c. As required by authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.
- C. Apply identification devices to surfaces that require finish after completing finish work.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Standard-grade receptacles, 125 V, 20 A.
 - 2. GFCI receptacles, 125 V, 20 A.
 - 3. Toggle switches, 120/277 V, 20 A.
 - 4. Occupancy sensors.
 - 5. Wall-box dimmers.
 - 6. Wall plates.
 - 7. Floor service fittings.

1.2 DEFINITIONS

- A. GFCI: Ground-fault circuit interrupter.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: List of legends and description of materials and process used for pre-marking wall plates.

PART 2 - PRODUCTS

2.1 GENERAL WIRING-DEVICE REQUIREMENTS

- A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
- B. Comply with NFPA 70.
- C. RoHS compliant.
- D. Comply with NEMA WD 1.
- E. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:
 - 1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
 - 2. Devices shall comply with requirements in this Section.
- F. Devices for Owner-Furnished Equipment:
 - 1. Receptacles: Match plug configurations.
- G. Device Color:
 - 1. Wiring Devices Connected to Normal Power System: White unless otherwise indicated or required by NFPA 70 or device listing.
- H. Wall Plate Color: For plastic covers, match device color.
- I. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 STANDARD-GRADE RECEPTACLES, 125 V, 20 A

- A. Duplex Receptacles, 125 V, 20 A:
 - 1. Description: Two pole, three wire, and self-grounding.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Standards: Comply with UL 498 and FS W-C-596.
- B. Tamper-Resistant Duplex Receptacles, 125 V, 20 A:
 - 1. Description: Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Standards: Comply with UL 498 and FS W-C-596.

2.3 GFCI RECEPTACLES, 125 V, 20 A

- A. Duplex GFCI Receptacles, 125 V, 20 A:
 - 1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Type: Feed through.
 - 4. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.
- B. Tamper-Resistant Duplex GFCI Receptacles, 125 V, 20 A:
 - 1. Description: Integral GFCI with "Test" and "Reset" buttons and LED indicator light. Two pole, three wire, and self-grounding. Integral shutters that operate only when a plug is inserted in the receptacle.
 - 2. Configuration: NEMA WD 6, Configuration 5-20R.
 - 3. Type: Feed through.
 - 4. Standards: Comply with UL 498, UL 943 Class A, and FS W-C-596.
 - 5. Marking: Listed and labeled as complying with NFPA 70, "Tamper-Resistant Receptacles" Article.

2.4 TOGGLE SWITCHES, 120/277 V, 20 A

- A. Single-Pole Switches, 120/277 V, 20 A: Standards: Comply with UL 20 and FS W-S-896.
- B. Three-Way Switches, 120/277 V, 20 A: Comply with UL 20 and FS W-S-896.

2.5 OCCUPANCY SENSORS

- A. Wall Switch Sensor Light Switch, Dual Technology:
 - 1. Description: Switchbox-mounted, combination lighting-control sensor and conventional switch lighting-control unit using dual (ultrasonic and passive infrared) technology.
 - 2. Standards: Comply with UL 20.
 - 3. Rated 960 W at 120 V ac for tungsten lighting, 10 A at 120 V ac or 10 A at 277 V ac for fluorescent or LED lighting, and 1/4 HP at 120 V ac.
 - 4. Adjustable time delay of 20 minutes.
 - 5. Able to be locked to Automatic-On mode.
 - 6. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc.
 - 7. Connections: Provisions for connection to BAS.
- B. Wall Sensor Light Switch, Passive Infrared:
 - 1. Description: Switchbox-mounted, combination, lighting-control sensor and conventional switch lighting-control unit using passive infrared technology.

2. Standards: Comply with UL 20.
 3. Connections: Provisions for connection to BAS.
 4. Integral relay for connection to BAS.
 5. Adjustable time delay of 20 minutes.
 6. Able to be locked to Automatic-On mode.
 7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc.
- C. Wall Sensor Light Switch, Ultrasonic:
1. Description: Switchbox-mounted, combination, lighting-control sensor and conventional switch lighting-control unit using ultrasonic technology.
 2. Standards: Comply with UL 20.
 3. Connections: Provisions for connection to BAS.
 4. Integral relay for connection to BAS.
 5. Adjustable time delay of 20 minutes.
 6. Able to be locked to Automatic-On mode.
 7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc.

2.6 DIMMERS

- A. Wall-Box Dimmers:
1. Description: Modular, full-wave, solid-state dimmer switch with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.
 2. Control: Continuously adjustable slider; with single-pole or three-way switching.
 3. Standards: Comply with UL 1472.
 4. LED Lamp Dimmer Switches: Modular; compatible with LED lamps; trim potentiometer to adjust low-end dimming; capable of consistent dimming with low end not greater than 20 percent of full brightness.

2.7 WALL PLATES

- A. Single Source: Obtain wall plates from same manufacturer of wiring devices.
- B. Single and combination types shall match corresponding wiring devices.
1. Plate-Securing Screws: Metal with head color to match plate finish.
 2. Material for Finished Spaces: Smooth, high-impact thermoplastic.
 3. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.
 4. Material for Damp Locations: Thermoplastic with spring-loaded lift cover and listed and labeled for use in wet and damp locations.
- C. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with Type 3R, weather-resistant thermoplastic with lockable cover.

2.8 FLOOR SERVICE FITTINGS

- A. Flush-Type Floor Service Fittings:
1. Description: Type: Modular, flush-type, dual-service units suitable for wiring method used, with cover flush with finished floor.
 2. Compartments: Barrier separates power from voice and data communication cabling.
 3. Service Plate and Cover: Rectangular, with satin finish.
 4. Power Receptacle: NEMA WD 6 Configuration 5-20R, gray finish, unless otherwise indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated.
- B. Coordination with Other Trades:
1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes, and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
 2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
 4. Install wiring devices after all wall preparation, including painting, is complete.
- C. Conductors:
1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
 2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
 3. The length of free conductors at outlets for devices shall comply with NFPA 70, Article 300, without pigtails.
 4. Existing Conductors:
 - a. Cut back and pigtail, or replace all damaged conductors.
 - b. Straighten conductors that remain and remove corrosion and foreign matter.
 - c. Pig-tailing existing conductors is permitted, provided the outlet box is large enough.
- D. Device Installation:
1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
 3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
 4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
 6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
 7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
 8. Tighten unused terminal screws on the device.
 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.
- E. Receptacle Orientation:
1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the right.
- F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
- G. Dimmers:

1. Install dimmers within terms of their listing.
 2. Verify that dimmers used for fan-speed control are listed for that application.
 3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device, listing conditions in the written instructions.
- H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multi-gang wall plates.
- I. Adjust locations of floor service outlets and service poles to suit arrangement of partitions and furnishings.
- 3.2 GFCI RECEPTACLES
- A. Install non-feed-through GFCI receptacles where protection of downstream receptacles is not required.
- 3.3 IDENTIFICATION
- A. Comply with Section 26 05 53 "Identification for Electrical Systems."
- B. Identify each receptacle with panelboard identification and circuit number. Use hot, stamped, or engraved machine printing with white-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.
- C. Essential Electrical System: Mark receptacles supplied from the essential electrical system to allow easy identification using a self-adhesive label.
- 3.4 FIELD QUALITY CONTROL
- A. Tests for Receptacles:
1. Line Voltage: Acceptable range is 105 to 132 V.
 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.
 3. Ground Impedance: Values of up to 2 ohms are acceptable.
 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
 5. Using the test plug, verify that the device and its outlet box are securely mounted.
 6. Tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault-current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.
- B. Wiring device will be considered defective if it does not pass tests and inspections.

END OF SECTION

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