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project manual

new project for:

Central County Fire & Rescue House #06

1151 Jungs Station Road
St. Charles, Mo. 63303-6010

procurement & contracting requirements

specifications

Project Manual 1 of 2

Monday+June 8, 2026
Architect Project No.: 24057

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ARCHITECTURAL PROFESSIONAL SEAL

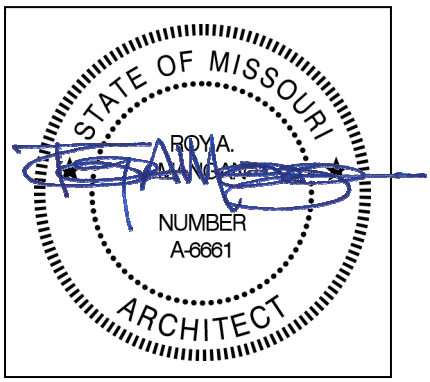
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NOTE: PLEASE REFERENCE SPECIFICATIONS SECTION 00 01 10 - TABLE of CONTENTS FOR ADDITIONAL CONTENT.

I hereby disclaim any responsibility for all other Specifications, Estimates, Reports, Documents or Instruments related to, or intended to be used as part of this Project.

ARCHITECTURAL PROFESSIONAL SEAL:
NAME: ROY A. MANGAN
MISSOURI LICENSE NO.: A-6661
LICENSE EXPIRES: DECEMBER 31, 2026
DISCIPLINE: ARCHITECTURAL
TITLE: PRINCIPAL, RA
COMPANY NAME: ARCHIMAGES, INC.



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SECTION 00 01 12

STRUCTURAL PROFESSIONAL SEAL

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STRUCTURAL PROFESSIONAL SEAL:
NAME: Jason N. Richards
MISSOURI LICENSE NO.: 2000162164
LICENSE EXPIRES: DECEMBER 31, 2026
DISCIPLINE: STRUCTURAL
TITLE: Managing Principal
COMPANY NAME: kpff Consulting Engineers



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SECTION 00 01 13

FIRE PROTECTION PROFESSIONAL SEAL

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FIRE PROTECTION PROFESSIONAL SEAL:
NAME: Richard Halteman
MISSOURI LICENSE NO.: E-25112
LICENSE EXPIRES: December 31, 2026
DISCIPLINE: FIRE PROTECTION
TITLE: Senior Project Manager
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 14

PLUMBING PROFESSIONAL SEAL

Disclaimer of Responsibility:

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PLUMBING PROFESSIONAL SEAL:
NAME: Richard Halteman
MISSOURI LICENSE NO.: E-25112
LICENSE EXPIRES: December 31, 2026
DISCIPLINE: PLUMBING
TITLE: Senior Project Manager
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 15

HEATING, VENTILATING and AIR CONDITIONING PROFESSIONAL SEAL

Disclaimer of Responsibility:

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HEATING, VENTILATING and AIR
AIR CONDITIONING PROFESSIONAL SEAL:
NAME: Richard Halteman
MISSOURI LICENSE NO.: E-25112
LICENSE EXPIRES: December 31, 2026
DISCIPLINE: HEATING, VENTILATING and AIR CONDITIONING
TITLE: Senior Project Manager
COMPANY NAME: Horner & Shifrin, Inc.



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SECTION 00 01 16
ELECTRICAL PROFESSIONAL SEAL

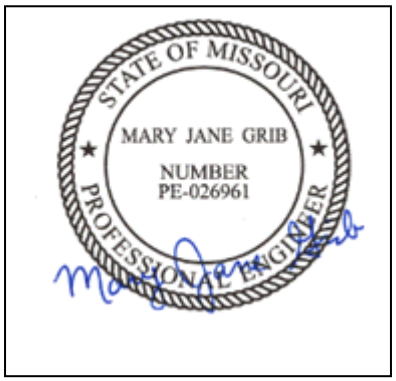
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ELECTRICAL PROFESSIONAL SEAL:
NAME: Mary Jane Grib
MISSOURI LICENSE NO.: PE-026961
LICENSE EXPIRES: DECEMBER 31, 2027
DISCIPLINE: ELECTRICAL
TITLE: Senior Project Manager
COMPANY NAME: Horner & Shifrin, Inc.



END OF SECTION

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SECTION 00 01 19
CIVIL PROFESSIONAL SEAL

Disclaimer of Responsibility:

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I do hereby disclaim any responsibility for all other Specifications, Estimates, Reports, Documents or Instruments, related to, or intended to be used as part of this Project.

CIVIL PROFESSIONAL SEAL:
NAME: Brandon A. Harp, P.E.
MISSOURI LICENSE NO.: E-28650
LICENSE EXPIRES: DECEMBER 31, 2027
DISCIPLINE: CIVIL
TITLE: President
COMPANY NAME: Civil Engineering Design Consultants Inc,



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SECTION 00 21 13
INSTRUCTIONS TO BIDDERS

SUMMARY

1.01 REFERERENCE INSTRUCTIONS TO BIDDERS, A.I.A DOCUMENT A701-2018, FOR ADDITIONAL CONTENT.

1.02 DOCUMENT INCLUDES

A. Invitation
   1. Bid Submission
   2. Intent
   3. All Work delineated within Contract Documents
   4. Contract Time

B. Bid Documents and Contract Documents
   1. Definitions
   2. Contract Documents Identification
   3. Availability
   4. Examination
   5. Inquiries and Addenda
   6. Product Assembly and System Substitutions

C. Site Assessment
   1. Project Site Examination
   2. Prebid Conference

D. Qualifications
   1. Qualifications
   2. Prequalification
   3. Subcontractors, Suppliers and Others

E. Bid Submission
   1. Submission Procedure
   2. Bid Ineligibility

F. Bid Enclosures/Requirements
   1. Performance Assurance
   2. Bid Form Requirements
   3. Fees for Changes within Work
   4. Bid Form Signature
   5. Additional Bid Information
   6. Selection and Award of Alternates

G. Offer Acceptance/Rejection
   1. Duration of Offer
   2. Acceptance of Offer

1.03 RELATED DOCUMENTS

A. Document 00 31 00 - Available Project Information.

B. Document 00 41 00 - Bid Form.

C. Document 00 41 10 - Contractor’s Affidavit for Public Construction Projects.

D. Document 00 41 20 - Non Collusion Affidavit.

E. Document 00 73 00 - Supplementary Conditions.

F. Document 01 10 10 - Summary.

INVITATION

2.01 BID SUBMISSION

A. **Bid Packages signed, under seal, fully executed and dated shall be received at the Offices of Owner, 3:00 p.m. local time, Wednesday July 22, 2026.**

B. Offers submitted after said date, time identified above, shall be returned, unopened.

C. Submit all required Bid Form Supplements, as delineated within Contract Documents.

D. Offers shall be opened publicly.

2.02 INTENT

A. **Intent of Bid request is to obtain an Offer to perform said Scope of Work, as required to fully complete this particular Project, for a Stipulated Sum Contract, in full accordance with Contract Documents.**

B. Entire Scope of Work shall be completed within (1) One individual phase as delineated within Contract Documents.

2.03 WORK IDENTIFIED WITHIN CONTRACT DOCUMENTS

A. Work of this proposed Contract comprises General Building Construction.

B. **Existing Project Site Street Address:**

1151 Jungs Station Road
St. Charles, Mo. 63303-6010

2.04 CONTRACT TIME

A. Identify **entire** Contract Time within Bid Form. Project Substantial Completion Date within Agreement shall be Contract Time added to Commencement date.

B. Delays, Liquidated Damages: In event entire Project Substantial Completion, of any aspect of Work, is not achieved by those dates previously agreed upon, Contractor shall pay Owner Liquidated Damages, as described within Section 00 73 00 - Supplementary Conditions.

C. **Owner requires all Work, this Contract, be completed as quickly as possible and consideration will be given to time of completion when reviewing submitted Bids.**

BID, CONTRACT DOCUMENTS

3.01 DEFINITIONS

A. Bid Package Documents: Contract Documents supplemented with Invitation To Bid, Instructions to Bidders, Information Available to Bidders, Bid Form, all Supplements to Bid Form and Appendices.

B. Contract Documents: As delineated within A.I.A. A201, Article 1, including all Drawings, Specifications and Addendum.

C. Bid, Offer, or Bidding: Act of submitting an Offer, under Seal.

D. Bid Amount: That monetary sum identified by Bidder, within Bid Package.

E. A Bidder is a person or entity, who submits a Bid Package and who meets all requirements set forth within Contract Documents. This shall include, but not be limited to, General Contractors, Subcontractors, Sub Subcontractors, Venders and Suppliers. All Bidders shall be responsible for bidding entire set of Contract Documents.

3.02 CONTRACT DOCUMENTS IDENTIFICATION

A. Contract Documents are identified as Architect's Project Number **24057** as prepared by Archimages, Inc. These documents shall also include Drawings, Specifications, Addendum and all related information issued via Architect's Engineering Consultants as delineated within Contract Documents.

3.03 AVAILABILITY

A. Electronic copies of Contract Documents may be downloaded, **at no cost**, from Archimages, Inc., by contacting Nicole Luedloff, via email: nluedloff@archimages-stl.com.

B. These Contract Documents are made available only for purpose of obtaining offers for this particular Project. Their use does not grant license for any other purposes.

3.04 EXAMINATION

A. Bid Documents may be viewed at Offices of Archimages, Inc.; 143 West Clinton Place Kirkwood, Mo. 63122-5809.

B. Upon receipt of Contract Documents, confirm same are fully complete. Notify Archimages, Inc. **immediately**, should any documents appear incomplete.

C. All Bidders shall be responsible for reviewing all Work delineated within Contract Documents, prior to Submitting their Bid Package.

3.05 INQUIRIES AND ADDENDA

A. **Direct all questions to Joe McKinney via email; jmckinney@archimages-stl.com. and copy Nicole Luedloff via email; nluedloff@archimages-stl.com.**

B. All Addenda shall form a portion of Contract Documents. Include any, all resultant costs, credits within Bid Package accordingly.

C. Verbal answers are not binding upon any Party.

D. **Any clarifications requested by Bidders, must be received in writing, by Archimages, Inc., not less than (5) Five Business Days, prior to that date previously set for receipt of Bid Packages.** All replies shall be in form of Addendum, copies of which, will be forwarded to all known recipients. Said notice shall not be construed as a restriction against discussion of Bid Documents, or an elimination of Bidders responsibility to notify Archimages, Inc. of any ambiguity, inconsistency or errors.

3.06 PRODUCT ASSEMBLY, SYSTEM SUBSTITUTIONS

A. General Requirements for Substitution Requests:
   1. Project Manual establishes standards, all Products, assemblies, and systems.
   2. **Submit all requests only, for those elements, for which a substitution is specifically allowed.**
   3. Provide complete detailed information, as required to accurately determine acceptability of proposed substitution.
   4. Provide complete, detailed information on all required revisions, to any other Work, as required to properly coordinate, implement each proposed substitution.

B. Substitution Request Time Restrictions:
   1. Where Contract Documents stipulate a particular Product, Substitutions will be considered up to (5) Five Business Days prior to receipt of Bid Packages.

C. Substitution Request Form:
   1. Submit all Substitution requests via accurately completing CSI Substitution Request (During Bidding/Negotiating Phase) **only**. Reference attached Form for additional Content. **Use of any other Forms is unacceptable & will not be permitted.**

D. Review and Acceptance of Request:
   1. Archimages, Inc. may or may not approve proposed Substitutions and will issue Addendum to all known bidders, accordingly.
   2. For any approved substitution, include detailed representation of any changes within Bid, that are required within Work, Contract Time or Contract Sum, as required to accommodate Substitutions. Any later claim by Bidder for any addition to Contract Time or sum, due to changes in Work, necessitated by use of Substitution will not be permitted, considered.

3. Each submission shall provide complete detailed information, as required to accurately determine acceptability of said Product.
4. Provide complete thoroughly detailed information, any and all requested revisions, any and all related Work, as required to accurately coordinate, implement each proposed substitution.
5. **Provide all Products, as specified, unless substitutions have been submitted in this manner and previously approved by Architect.**
6. **No substitutions will be considered, following award of Contract, no exceptions.**

E. Reference Section 01 60 00 - Product Requirements, for additional content.

SITE ASSESSMENT

4.01 SITE EXAMINATION

A. Thoroughly examine this particular Existing Project Site, prior to submitting Bid Package.

B. Visit to said Project Site, in conjunction with Pre Bid Conference, has been scheduled.

4.02 PRE BID CONFERENCE

A. **A Pre Bid Conference has been scheduled for 10:00 a.m. local time, Tuesday July 7, 2026, Existing Project Site; 1151 Jungs Station Road St. Charles, Mo. 63303-6010.**

B. All General, Subcontractor Bidders, Suppliers and Vendors are invited.

C. Owner, Architect Representatives will be in attendance.

D. Summarized Meeting Minutes from this Pre Bid Conference shall be circulated to all attendees and will constitute a portion of the Contract Documents.

E. Detailed information, relevant to Contract Documents, will be recorded within an Addendum and issued to all Bid Document Recipients, known to Archimages, Inc.

QUALIFICATIONS

5.01 PREQUALIFICATION REQUIREMENTS

A. All Bidders shall complete and Submit A.I.A Document A305, Current Edition, via email, to Archimages, Inc., on or before 10:00 a.m. local time, (1) One calendar week prior to previously established Bid Due Date.

5.02 SUBCONTRACTORS, SUPPLIERS, VENDORS

A. Owner reserves right to reject any proposed Subcontractor, Supplier, Vendor.

BID ENCLOSURES/REQUIREMENTS

6.01 SECURITY DEPOSIT

A. Bid Package shall include Security Deposit as follows:
1. Bid Bond, no less than (5) Five Percent of total Bid Amount, upon AIA A310 Bid Bond Form.

B. Endorse said Bid Bond within name of Owner as obligee, signed and sealed by General Contractor Principal, Surety.

C. Security Deposit will be returned, following delivery to Owner, required Performance and Payment Bond(s) via previously accepted Bidder.

D. Include entire cost of Bid Security within Bid Amount.

E. After a Bid has been accepted, all securities will be returned to Respective Bidders.

F. If no Contract is awarded, all Security Deposits will be returned.

6.02 PERFORMANCE ASSURANCE

A. Any accepted Bids must provide Performance and Payment Bond as, delineated within Section 00 73 00 - Supplementary Conditions.

B. Include entire cost of Performance and Payment Bonds within Bid Amount.

6.03 INSURANCE

A. Provide a fully executed "Undertaking of Insurance" within a Standard Form, provided by said Insurance Company, clearly stating their intention to provide Insurance to Bidder, in full accordance with all insurance requirements and as delineated within Contract Documents.

6.04 BID FORM REQUIREMENTS

A. Complete all requested information within Bid Form and Appendices.

B. Taxes: Reference Section 00 73 00 - Supplementary Conditions, for additional content.

6.05 FEES, CHANGES WITHIN SCOPE OF WORK

A. Include all appropriate fees, Overhead and Profit, upon own Work and any Work performed by Subcontractors, as delineated within Section 00 73 00 - Supplementary Conditions.

6.06 BID FORM SIGNATURE

A. The Bid Form shall be signed by Bidder, as follows:
   1. Sole Proprietorship: Signature of Sole Proprietor within the presence of a witness, who will also sign. Insert the words "Sole Proprietor" under the signature and affix seal.
   2. Partnership: Signature of **all** partners within the presence of a witness who will also sign. Insert the word "Partner" under each signature and affix seal.
   3. Corporation: Signature of duly authorized signing officer(s) within their normal signatures. Insert the Officer's capacity, in which the signing Officer acts, under each signature and affix Corporate Seal. If the Bid is signed by officials, other than President and Secretary of Company, or the President, Secretary, Treasurer of Company, a copy of the by law resolution, of their board of directors, authorizing them to do so, must also be submitted with Bid Form within said Bid envelope.
   4. Joint Venture: Each party of joint venture shall execute Bid Form, under their respective seals, in manner appropriate to such party, as described above and similar to the requirements of a Partnership.

6.07 ADDITIONAL BID INFORMATION

A. Submit following Supplements, concurrent with Bid Submission:
   1. Document 00 41 10 - Contractor's Affidavit for Public Construction Projects.
   2. Document 00 41 20 - Non Collusion Affidavit.
   3. Document 01 22 22 - Unit Prices Form.

6.08 SELECTION, AWARD OF ALTERNATES, IF APPLICABLE

A. Indicate any variation within Bid price, all Alternates listed within Bid Form. Indicate all Alternates, as a difference in Bid Price, by adding to or deducting from said Base Bid price.

B. Owner reserves the right to accept Alternates in any order, in combination, as required to determine final Scope of Work, Contract amount.

OFFER ACCEPTANCE, REJECTION

7.01 DURATION, OFFER

A. All Bids shall remain open to acceptance and shall be irrevocable for a period of (60) Sixty Business Days, following Bid Closing Date.

7.02 ACCEPTANCE OF OFFER

A. Owner reserves right to accept or reject any, all offers.

B. Owner intends to award Contract based on Bid that, within Owner's sole discretion, represents best, most responsible and most responsive Bid, that best meets all interests and requirements

of Owner. Owner reserves the right, within Owner's sole discretion, to reject any, all Bids, waive any technicalities, deficiencies within any, all bids, negotiate with any, all Bidders or any others, as required to obtain more favorable terms, or prices and to award Contract to someone other than Bidder submitting the lowest cost Bid Proposal, with or without negotiation. Owner reserves the right to not open a sole Bid.

C. Owner intends to award Contract to Bidder who agrees to award Work and select Subcontractors, who agree to award Work, to all Contractors and Subcontractors, who adhere to and award Work based upon historical craft jurisdiction.

D. Owner intends to make any investigation of Bidder, they deem necessary, as required to determine if Bidders have had any prevailing wage violations within the last (20) Twenty Years. Bidders shall assist in furnishing said information, regarding their status upon this reasonable request. Owner reserves the right to reject any Bid, if evidence submitted by, or investigation of Bidder fails to satisfy Owner that Bidder has provided services without any prevailing wage violations within the last (20) Twenty years.

E. Following acceptance by Owner, Archimages, Inc. will, upon Owner’s behalf, issue a written Letter of Contract Award to the successful Bidder.

END OF SECTION

AIA® Document A701® – 2018

Instructions to Bidders

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

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

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

Archimages, Inc.
143 W. Clinton Place
St. Louis, MO 63122

TABLE OF ARTICLES

1 DEFINITIONS

2 BIDDER'S REPRESENTATIONS

3 BIDDING DOCUMENTS

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7 PERFORMANCE BOND AND PAYMENT BOND

8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

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

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

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

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

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ARTICLE 1 DEFINITIONS

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

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

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

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

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

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

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

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

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

ARTICLE 2 BIDDER'S REPRESENTATIONS

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

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

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.
(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

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

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

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

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

§ 3.2 Modification or Interpretation of Bidding Documents

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

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

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

§ 3.3 Substitutions

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

§ 3.3.2 Substitution Process

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

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

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

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

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

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

§ 3.4 Addenda

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

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

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

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

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

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

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

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

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

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

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

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

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

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

§ 4.2 Bid Security

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

(Insert the form and amount of bid security.)

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

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

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

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:
(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

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

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

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

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

§ 4.4 Modification or Withdrawal of Bid

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

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

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

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

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

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

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

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

ARTICLE 6 POST-BID INFORMATION

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

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

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

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

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

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

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

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

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

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

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

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.
(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

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

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

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

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

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS
§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013.)

.5 Drawings

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Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda:

Number	Date	Pages

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

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

[ ] The Sustainability Plan:

Title	Date	Pages

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents listed below:
(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

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SECTION 00 31 00

AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 Annual WAGE ORDER No. 33

A. Annual Wage Order No. 33, issued via State of Missouri, **St. Charles County**, is effective at time of performance, this Work and constitutes a portion of Contract Documents. Annual Wage Order No. 33 (in effect as of March 10, 2026), has been attached to this Section.

B. It is the responsibility of all Bidders, to fully comply with all minimum wage rates, as set forth within Annual Wage Order No. 33, including any subsequent Annual Wage Order regulations that may be issued, whenever Annual Wage Order No. 33 expires. Reference Section 00 73 00 - Supplementary Conditions for additional Content.

C. Contractor, each SubContractors shall maintain a detailed accurate record, indicating names, occupations, all laborers, workers, vendors and mechanics employed, in connection with this particular Project and shall also provide actual hourly wages paid each person. This record shall be open, all reasonable business hours to inspection by Owner, their Officers, Agents and Director of Labor, Deputies, Agents. These Records of Employees and Wages Paid are required by Annual Wage Order No. 33. Architect will require an affidavit be submitted, stating full compliance with Annual Wage Order No. 33, within each Application for Payment. In addition, a weekly Certified Payroll submittal will be required. **Payment will not be made, unless all certified payroll documentation has been provided for said time period covered, within Pay Application.**

D. Contractor shall forfeit, as penalty to Owner, $10.00 Ten dollars, each worker employed, each calendar day, or portion thereof, if Worker is paid less than said stipulated rates, for any Work done in relation to this Contract.

E. All Contractor's Bonds shall include such provisions, as required to guarantee faithful performance of prevailing hourly wage clause, as delineated within Contract Documents.

F. Additional Content may be found within Missouri Department of Labor website, http://www.labor.mo.gov.

1.02 Buy AMERICAN Act; "NOT APPLICABLE, THIS PARTICULAR PROJECT"

1.03 Geotechnical Report; "NOT APPLICABLE, THIS PARTICULAR PROJECT"

1.04 Water Pressure Flow Test

A. A Water Pressure Flow Test was performed **on Thursday April 23, 2026 at 10:12 a.m. local time by Hakenwerth Fire Sprinkler, L.L.C., for this particular Project, results as follows:**

B. Gauge Hydrant Readings as follows:

1. Static Pressure (psi): **62**
2. Residual Pressure (psi): **54**

C. Flow Hydrant 1:

1. Pitot Pressure (psi): **8**
2. Outlet Diameter (in): **4**
3. Number of Outlets: **1**
4. Outlet Coefficient: **1**
5. Pumper Coefficient: **1**
6. Adjusted Coefficient: **1**
7. Flow (gpm): **1083**

D. Flow Hydrant 2:

1. Pitot Pressure (psi): **0**
2. Outlet Diameter (in): **2.5**
3. Number of Outlets: **1**
4. Outlet Coefficient: **0.9**
5. Pumper Coefficient: **1**
6. Adjusted Coefficient: **1**
7. Flow (gpm): **0**
8. Total Flow (gpm): **1083**
9. Minimum Desired Pressure (psi): **20**
10. Expected Flow at Minimum Desired pressure (gpm): **2652**
11. Minimum Desired Flow (gpm): **1500**
12. Expected Pressure at Minimum Desired Flow (psi): **47**
13. Expected Flow at 0 psi: **3273**

PART 2 PRODUCTS; " NOT APPLICABLE, THIS PARTICULAR PROJECT "

PART 3 EXECUTION

3.01 OBTAINMENT of PERMITS by CONTRACTOR

A. Contractor shall pay for, secure, all necessary Permits, particular to this Project and Submit copies of same, including all receipts to Owner, Architect for review. **No Overhead or Profit costs may be included within any portion of this pricing.** If approved, Owner shall reimburse Contractor these costs, via Project Change Order.

B. Following Permits, Approvals shall be secured prior to Mobilization upon or commencing any Scope of Work, within this particular Existing Project Site;

1. Zoning Board of Appeals, written notice of approval.
2. Planning Commission, written notice of approval.
3. Existing Project Site, Entire Scope of Work, written Permit documentation.
4. Entire Demolition Scope of Work, written Permit documentation.
5. All Foundation, Earthwork, Exterior Improvements, Utilities Scope of Work, written Permit documentation.
6. All Building Structure Scope of Work, written Permit documentation, all Trades.
7. Any, all Scope of Work, this particular Project, written Permit documentation, as may be required by those Local Authorities having Jurisdiction.

END OF SECTION

Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MIKE KEHOE, Governor

Annual Wage Order No. 33

Section 092

ST. CHARLES COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Logan Hobbs, Director
Division of Labor Standards

Filed With Secretary of State: **March 10, 2026**

Last Date Objections May Be Filed: **April 9, 2026**

Prepared by Missouri Department of Labor and Industrial Relations

ST. CHARLES COUNTY

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$67.98
Boilermaker	$83.23
Bricklayer - Stone Mason	$67.89
Carpenter	$68.72
Lather	
Linoleum Layers & Cutter	
Millwright	
Pile Driver	
Cement Mason	$62.83
Plasterer	
Communication Technician	$68.88
Electrician (Inside Wireman)	$83.88
Electrician (Outside Lineman)	$35.91*
Outside - Groundman	
Outside - Groundman Tree Trimmer	
Outside - Lineman Operator	
Outside - Lineman Tree Trimmer	
Elevator Constructor	$106.19
Glazier	$71.60
Iron Worker	$75.15
Laborer	$58.30
Laborer - First Semi-Skilled	
Laborer - General	
Laborer - Second Semi-Skilled	
Laborer - Skilled	
Mason	$58.68
Marble Finisher	
Marble Mason	
Terrazzo Finisher	
Terrazzo Worker	
Tile Finisher	
Tile Setter	
Operating Engineer	$76.35
Operating Engineer - Group I	
Operating Engineer - Group II	
Operating Engineer - Group III	
Operating Engineer - Group III - A	
Operating Engineer - Group IV	
Operating Engineer - Group V	
Painter	$57.37
Plumber	$83.90
Pipe Fitter	
Roofer/WaterProofer	$62.33
Sheet Metal Worker	$78.83
Sprinkler Fitter - Fire Protection	$87.99
Truck Driver	$35.91*
Truck Control Service Driver	
Truck Driver, Teamsters Group I	
Truck Driver, Teamsters Group II	
Truck Driver, Teamsters Group III	
Truck Driver, Teamsters Group IV	

*** The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.**

****The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.**

ST. CHARLES COUNTY

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$69.86
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$87.71
Outside - Groundman	
Outside - Groundman Tree Trimmer	
Outside - Lineman Operator	
Outside - Lineman Tree Trimmer	
Laborer	$58.65
Laborer - General	
Laborer - Skilled	
Operating Engineer	$76.56
Operating Engineer - Group I	
Operating Engineer - Group II	
Operating Engineer - Group III	
Operating Engineer - Group IV	
Truck Driver	$53.65
Truck Control Service Driver	
Truck Driver, Teamsters Group I	
Truck Driver, Teamsters Group II	
Truck Driver, Teamsters Group III	
Truck Driver, Teamsters Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance iwth the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title shown on the Building Construction Rate Sheet.

***The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.**

****The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.**

OVERTIME
and
HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

Hakenwerth Fire Sprinkler, LLC
2143 Farris County Rd.
Foristell, Mo 63348
Ph: 636-299-1894

FIRE HYDRANT FLOW TEST REPORT

Project name:	**Central County Fire & Rescue Station 6**
Project Address:	**1151 Jungs Station Rd** **St. Peters, Mo 63376**
Prepared for:	**CEDC - Brandon Harp**
Test conducted on:	**April 23, 2026**

WATER FLOW TEST REPORT

2143 Farris County Rd., Foristell, Mo 63348 Phone 636-299-1894 Email tonyh@hfsdesign.net

Residual Hydrant Readings	
Static pressure (psi)	62
Residual pressure (psi)	54

Flow Hydrant 1	
Pitot pressure (psi)	8
Outlet diameter (in.)	4
Outlet coefficient	1
Pumper coefficient	1
Adjusted coefficient	1
Flow (gpm)	1083

Flow Hydrant 2	
Pitot pressure (psi)	0
Outlet diameter (in.)	2 1/2
Outlet coefficient	0.9
Pumper coefficient	1
Adjusted coefficient	0.9
Flow (gpm)	0

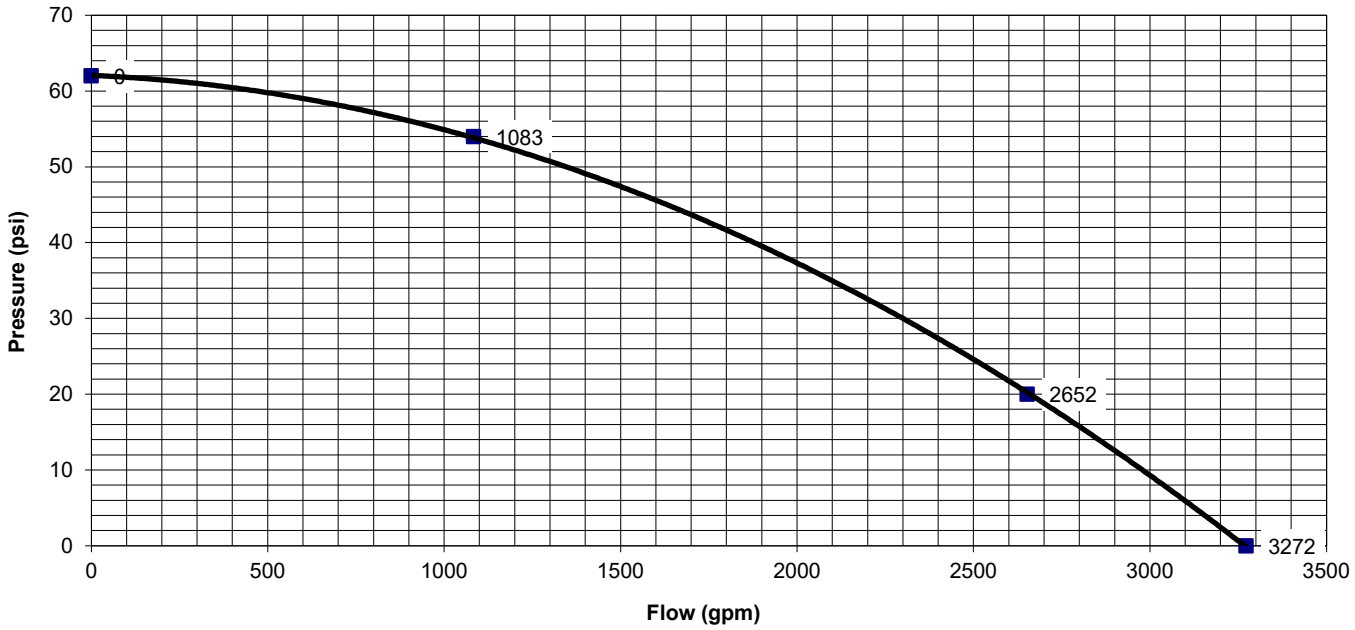
Total Flow (gpm)	1083
Minimum desired pressure (psi):	20
Expected flow at min. pressure (gpm):	2651.64
Minimum desired flow (gpm):	1500
Expected pressure at min. flow (psi):	47.37627
Expected flow at 0 psi:	3272.287

Pumper Outlet Coefficients (NFPA 291 Table 4.8.2)	
Pitot reading (psi)	Coefficient
2	0.97
3	0.92
4	0.89
5	0.86
6	0.84
7+	0.83

Project Name: Central County Fire & Rescue 6
Project Address: 1151 Jungs Station Rd
St Peters, MO 63376

Flow Test No.: 1 of 1
Date and Time: Thursday April 23, 2026 at 10:12 AM
Performed by: HFS DESIGN / St Peters Wtr / CCFR
Map provided: Yes

Notes: Refer to map for hydrant locations. Test performed utilizing a Big Boy Hose Monster Pitotless diffuser with 10' of 4" hose connected to the 4.5" pumper connection.



ALL FLOW TEST RESULTS ARE A REFLECTION OF AVAILABLE WATER AT THE DATE, TIME AND LOCATION OF TEST. THESE RESULTS ARE IN NO WAY A GUARANTEE OF AVAILABLE WATER SUPPLY.



BIG BOY HOSE MONSTER™

HMBB4 - GPM FLOW CHART

PSI	GPM
5	856
6	938
7	1013
8	1083
9	1149
10	1211
11	1270
12	1303
13	1356
14	1407
15	1456
16	1504
17	1550
18	1595
19	1639
20	1682
21	1723
22	1764
23	1803
24	1842
25	1880
26	1917
27	1954
28	1990
29	2025
30	2059

PSI	GPM
31	2093
32	2127
33	2160
34	2192
35	2224
36	2256
37	2287
38	2318
39	2323
40	2353
41	2382
42	2411
43	2439
44	2468
45	2495
46	2523
47	2550
48	2577
49	2604
50	2630
51	2657
52	2683
53	2708
54	2734
55	2759

THIS DEVICE IS FM APPROVED

The pressure vs. flow rate data developed within this flow chart is based on the average K-factor measured during laboratory testing. This data has been determined to be within the acceptable limitations for accuracy.

It is the user's responsibility to verify that the correct chart and column is being used.

Find this flow chart and other resources at:
hosemonster.com/resources

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FIRE PUMP TESTING SOFTWARE
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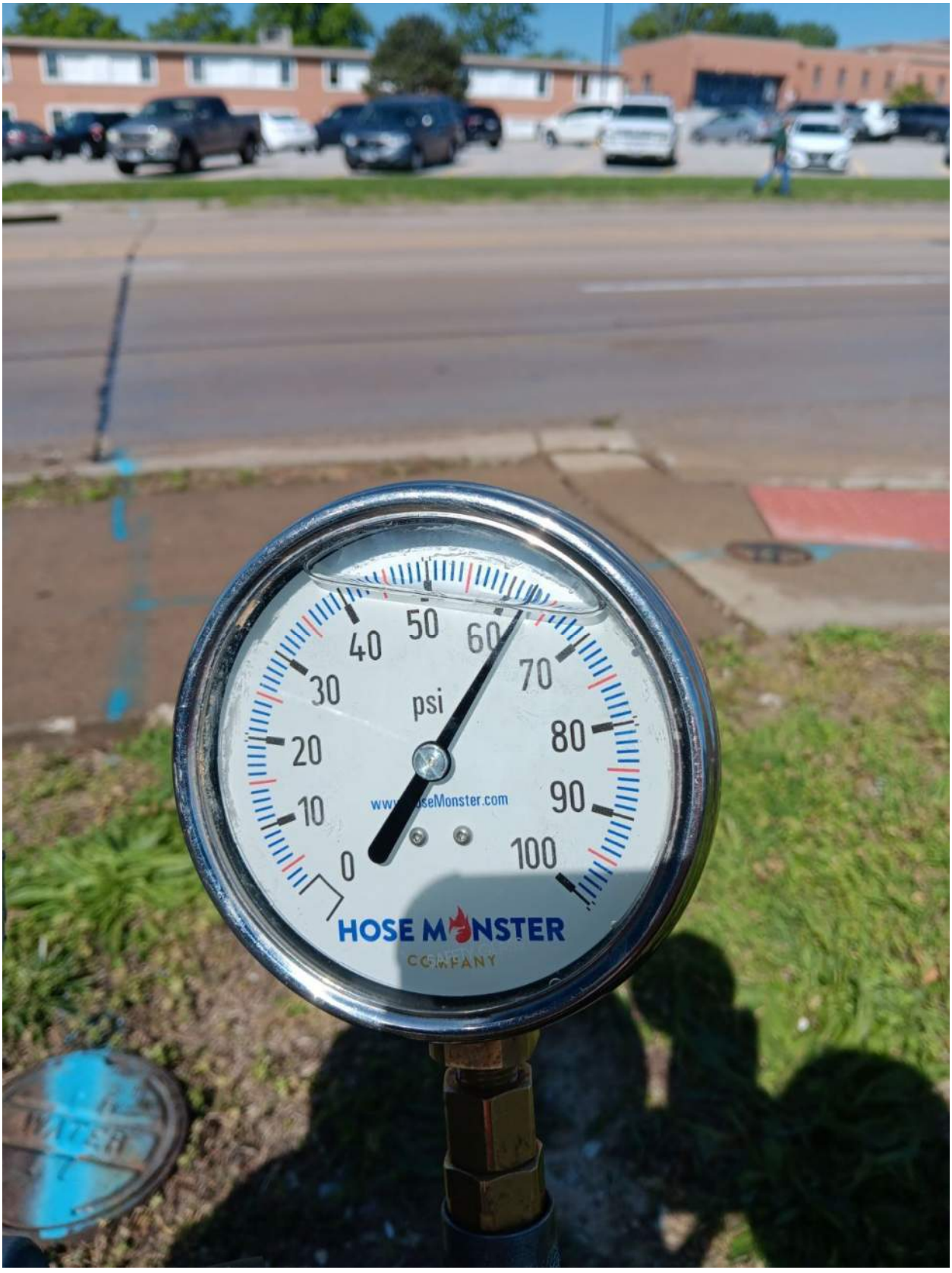
Learn more at: *www.hosemonster.com/fpts*

(888) 202-9987 (847) 434-0073 Service@FlowTest.com www.HoseMonster.com
MANUFACTURED BY **THE HOSE MONSTER™ COMPANY**

HOSE MONSTER
COMPANY


Central County Fire & Rescue Station 6
Flow Test
Legend
1151 Jungs Station Rd
Hydrant - flowed
Hydrant - gauged
Jungs Station Rd
Imperial Dr
Wild Plum Dr
Cobbler Ln
Plum Creek Dr
1151 Jungs Station Rd
N
Google Earth
600 ft

TEST STATIC 62 PSI



TEST RESIDUAL 54 PSI



TEST FLOW 8 PSI / 1083 GPM



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Section 00 41 00
Bid Form

Bid Form must be completed, received by Owner, Architect no later than 3:00 p.m. local time, Wednesday July 22, 2026. All Bidders are required to submit (3) Three copies of sealed Bid Package, in person, to; Central County Fire & Rescue 1220 Cave Springs Boulevard St. Peters, Mo. 63376-6517. Faxed or emailed Bid Packages are not acceptable, will not be permitted.

Bidder both proposes and agrees, if this Bid Package is accepted, to enter into an agreement with Owner, with Form included within Bidding Documents and shall perform all Work delineated within Contract Documents, for those prices and within those times delineated within this Bid Form and in full accordance with all other terms, conditions of Contract Documents.

Stated below is contact data for Bidder, submitting this Bid Package, who shall be responsible for all questions that may arise during Bid review and who may also be contacted to discuss acceptance or rejection of this Bid:

Company Name: _____

Contact Person Name, Title: _____

Street Address: _____

City, State Zip Code: _____

Office Phone Number: _____

Cell Phone Number: _____

Email Address: _____

Bidder accepts all terms, conditions of Contract Documents, including, but not limited to "Instructions to Bidders", without any limitations.

STIPULATED SUM BID FORM

Name of Project: **Central County Fire & Rescue, House #06**

Date: _____

Proposal from: _____

(Hereinafter called Bidder), a Corporation organized and existing under those Laws of State of

_____, a partnership, or an individual doing business as

_____ (cross out inapplicable).

To: **Mr. John LeDoux, Assistant Chief**
Central County Fire & Rescue
1220 Cave Springs Boulevard
St. Peters, Mo.63376-6517

Bidder, in full compliance with "Invitation for Bid", this particular Project and having carefully, thoroughly examined all Contract Documents, which documents are made a part hereof, as well as having thoroughly examined this particular Existing Project Site and any, all conditions that may affect said Work, agrees to furnish all Labor, Materials, Supplies as necessary, required to perform this particular entire Project Scope of Work, in full accordance with these Contract Documents and within time, prices stated below.

BASE BID

Central County Fire & Rescue, House #06		
Item No.:	Item Description:	Sub Total:
01	Performance Assurance Bonds	$
02	Independent Inspections, Testing Services Allowance	$
04	Entire Project Scope of Work	$

All applicable Federal and State Taxes have been excluded from our Bid Package.

Total all lines above shall equal Total Lump Sum Bid, this particular Project.

Furnish all Labor, Materials, Supplies as required to perform entire Scope of Work for: Central County Fire & Rescue, House #06, as delineated within Contract, Bid Documents, for a total Lump Sum Dollar Amount of:

$ _____

TIME

Pending Board approval, if required, an issuance of Conditional Notice to Proceed via Archimages, Inc. is anticipated to take place no later than; **Additional Content to Follow**. Bidder does hereby state, all time required to perform entire Scope of Work, this particular Project, as delineated within Contract, Bid Documents, including all previously accepted Project Alternates and any necessary Work required to complete said Project by previously indicated duration, proposed within this Bid Form. All Liquidated Damages shall be assessed for any delays to previously established Project Substantial Completion Date.

Bidders shall propose a contractual duration for achieving this particular Project Substantial Completion Date, per AIA A201-2017 Section 9.8, within blank space, provided below. This proposed duration shall be utilized as criteria for selection of General Contractor.

Complete entire Scope of Work, this particular Project, as required to achieve Project Substantial Completion within _____ calendar days, from issue date, Notice to Proceed.

"MANDATORY" ALTERNATES;

"Not Applicable, This Particular Project"

"VOLUNTARY" ALTERNATES;

"Not Applicable, This Particular Project"

BID FORM SUPPLEMENTS

Following Supplements have been attached to this Bid Form and are integral part of same:

- Document 00 41 10 - Contractor's Affidavit for Public Construction Projects
- Document 00 41 20 - Non Collusion Affidavit

We agree to submit following Supplements to Bid Forms, within (24) Twenty Four Hours of Bid Date,Time:

- Any, all Supplemental Bid Information, pertinent, this particular Project.
- Any, all Supplemental Bid Information, requested by Owner.

BID DOCUMENTS

A. Bidder acknowledges receipt of following Documents:

1. All Drawings, Specifications;

2. Addenda;
   a. Addenda No. _____ Dated _____
   b. Addenda No. _____ Dated _____
   c. Addenda No. _____ Dated _____
   d. Addenda No. _____ Dated _____
   e. Addenda No. _____ Dated _____

MISCELLANEOUS BID REQUIREMENTS

A. This Offer shall be open to acceptance, is irrevocable for period of (60) Sixty Business days from Bids Due Date.

B. Said undersigned understands, acknowledges, Owner reserves right to reject any, all Bids, SubContractors, Vendors, Employees.

C. Said undersigned further agrees to indemnify, save, protect Owner from and against any losses, judgments of every nature and description made, brought, or recovered against Owner by reason of any act or omission of undersigned, his agents, subcontractors, vendors, or employees within execution, Scope of Work, this particular Project.

D. Said undersigned hereby declares Stipulated Sum Bid is based solely upon those materials, equipment described within Contract, Bidding Documents (including all Addenda), **and that no Substitutions apply.**

E. Said undersigned declares they had ample opportunity, time to thoroughly examine Existing Project Site, Contract Documents and have carefully authored their Bid Package upon the basis thereof, also, that they have thoroughly examined, verified said Bid Package, including all Labor, Materials and Supplies required thereunder, said cost, figures therefore and hereby states those amounts set forth within Bid Package are accurate, correct and that no mistakes, errors have been included within same.

F. See next page for signatures.

VIA CORPORATION;

_____ _____

Corporation Name Officer Signature

_____

Officer Name, Title

Incorporated under Laws of the State of _____ (print)

Licensed to do business within said State (check one) [ ] Yes [ ] No

Business Street Address, all future Communications: _____

_____

(Seal if Bid Package provided by Corporation)

VIA PARTNERSHIP; Provide Business Street Address, Names all Partners. Each Partner shall execute said Bid Form under their respective seals. Attach a copy Partnership, Joint Venture agreement to Bid Form.

_____	_____
Partnership Name	Authorized Partner Signature
	_____
	Authorized Partner Name, Title (print)

VIA INDIVIDUAL;

_____	_____
Firm Name	Individual Signature
	_____
	Individual Name (print)

Business Street Address all future Communications: _____

VIA JOINT VENTURE; List all Parties, indicate that one who will be designated as the "Lead", this particular Project. Each party of Venture shall execute Bid Form under their respective seals. Attach copy of the Partnership, Joint Venture agreement to Bid Form.

_____	_____
_____	_____

END OF SECTION

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Section 00 41 01
Supplemental Bid Information

To: Mr. John LeDoux, Assistant Chief
Central County Fire & Rescue
1220 Cave Springs Boulevard
St. Peters, Mo. 63376-6517

This Form shall be fully completed, Submitted, in its entirety **no later than (24) Twenty Four hours following receipt of Bids to Architect, Owner.** Bidder shall submit fully completed Supplemental Bid Information as follows:

Attn: Mr. John LeDoux, Assistant Chief
In Reference To: Supplemental Bid Information for; Central County Fire & Rescue, House #06

Date: _____

Contractor Name: _____

Base Bid Cost Breakout for; Central County Fire & Rescue, House #06

Bidder shall provide **thoroughly detailed** Cost Breakouts for the following Divisions of Work, included within Base Bid, this particular Project.

Division 01 through 14 Scopes of Work;

_____Dollars $ _____

Division 20 through 28 Scopes of Work;

_____Dollars $ _____

Division 31 through 33 Scopes of Work;

_____Dollars $ _____

UNIT PRICES: All Unit Prices delineated herein shall include all General Conditions Costs, all Overhead Costs and all Profit Costs, this particular Project. All rates shall be applied either as an add or a deduct and an identical Dollar Value shall apply, either. There shall be (1) One and only (1) One Rate allowed per Unit Price, no exceptions.

Unit Price Description	Unit	Price Per Unit
Unit Price No. 01: Removal, disposal of all unsatisfactory soils and imports. Placement of all Finish Grading, via previously approved Geotechnical Engineered soils.	Per Cubic Yard	
Unit Price No. 02: Treatment of all unsatisfactory soils scheduled to remain.	Per Cubic Yard	
Unit Price No. 03: Removal, disposal of all Rippable Rock.	Per Cubic Yard	
Unit Price No. 04: Removal, disposal of all Non Rippable Rock.	Per Cubic Yard	
Unit Price No. 05: Removal, disposal of all Trench Rock.	Per Cubic Yard	
Unit Price No. 06: Removal, disposal of all existing buried concrete, and structures.	Per Cubic Yard	
Unit Price No. 07: Placement of all Engineer approved Lean Concrete, as required by soils remediation.	Per Cubic Yard	
Unit Price No. 08: Haul off of all surplus soils and spoils.	Per Cubic Yard	
Unit Price No. 09: Placement and Finish Grading of all soils imports.	Per Cubic Yard	
Unit Price No. 10: All One inch Clean Rock placement and compaction.	Per Cubic Yard	
Unit Price No. 11: All One inch Minus Rock placement and compaction.	Per Cubic Yard	
Unit Price No. 12: All Two inch Clean Rock placement and compaction.	Per Cubic Yard	
Unit Price No. 13: All Two inch Minus Rock placement and compaction.	Per Cubic Yard	
Unit Price No. 14: All Topsoil placement, compaction and Finish Grading.	Per Cubic Yard	

List of Proposed Subcontractors:

Provide thoroughly detailed list, including (2) Two apparent Subcontractors within each category, being considered for award, to perform Scope of Work, this particular Project and including Union affiliation, M/W/DBE status, corresponding Contract Dollar Amount.

If you do not plan to use a Subcontractor within a given category, indicate **"Self-Perform"**.

Owner reserves the right to accept or reject any SubContractor, Supplier, Vendor.

Scope of Work	Proposed SubContractor	Union/Non Union (Also Note M/W/DBE)	Contract Dollar Amount
Building Demolition	1. 2.		
Concrete Foundations	1. 2.		
Concrete Flatwork	1. 2.		
Masonry & Stone	1. 2.		
Steel	1. 2.		
Miscellaneous Rough & Finish Carpentry	1. 2.		
Weather Barriers	1. 2.		
Sheet Metal Flashing & Trim	1. 2.		
Doors, Frames & Hardware	1. 2.		
Aluminum Framed Storefronts	1. 2.		
Metal Framing & Gypsum Board	1. 2.		
Flooring Systems	1. 2.		

Tiling	1. 2.		
Ceiling Systems	1. 2.		
Interior & Exterior Painting	1. 2.		
Fire Protection Specialties	1. 2.		
Fire Protection	1. 2.		
Casework	1. 2.		
Countertops	1. 2.		
Plumbing	1. 2.		
Mechanical	1. 2.		
Electrical	1. 2.		
Communications	1. 2.		
Electronic Safety & Security	1. 2.		
Earthwork	1. 2.		
Exterior Improvements	1. 2.		
Utilities	1. 2.		

LIST ANY ADDITIONAL DOCUMENTS INCLUDED, HERE:

Submitted By:

Bidder Printed Name: _____

Bidder Authorized Signature: _____

Bidder Title: _____ (Seal as provided by Corporation)

Street Address: _____

Office Phone: _____

Cell Phone: _____

Date: _____

END OF SECTION

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SECTION 00 41 10

CONTRACTOR'S AFFIDAVIT for PUBLIC CONSTRUCTION PROJECTS

State of: Missouri

County of: Saint Charles

UNDERSIGNED, BEING DULY SWORN, DOES NOW STATE and DEPOSE following:

A. I am the_____(Title) of_____(Company) which is a Contractor for: **Central County Fire & Rescue, House #06**, and authorized to sign this Affidavit, on Company's behalf.

B. I have verified all information, set forth within this Affidavit. If any Subcontractors have been retained for this particular Project, I have also verified their information.

C. Contractor, all Subcontractors, Vendors have Workers' Compensation Insurance, that will cover all employees working upon this particular Existing Project Site and said Insurance shall meet, exceed those Requirements Established by Law, Local Authorities having Jurisdiction.

D. Contractor, all Subcontractors, Vendors have previously confirmed United States Citizenship, lawful status, all their Workers employed upon this particular Existing Project Site and **will not knowingly employ any person, who is unauthorized alien**, in connection with any Contracted Services.

E. Contractor, all Subcontractors, Vendors have been informed by St. Charles County, of all requirements to pay Prevailing Wages and will pay said Wages to all Workers employed upon this particular Existing Project Site, as established by current applicable Annual Wage Order No. 32, for St. Charles County, State of Missouri, or Federal Wage Order, whichever may be greater.

F. Contractor, all Subcontractors, Vendors shall be in full compliance with all Federal Laws, requiring any Accredited Apprenticeship Program.

G. Contractor, all Subcontractors, Vendors shall have previously enrolled within, currently participate in a Federal Work Authorization Program, with respect to all employees Working in connection, all Contracted Services.

H. Contractor, all Subcontractors shall be in full compliance with 34.600, RSMo. Contractor now hereby affirms, they are not currently engaged in and shall not, for the duration of this Agreement, engage in any boycott of goods or services, from State of Israel, companies doing business in, with State of Israel, or authorized by, licensed by, organized under, laws of State of Israel, or persons, entities doing business within State of Israel.

I. Further, Affiant sayeth naught.

_____

Authorized Officer of Contractor

SUBSCRIBED and SWORN BEFORE ME, this _____ Day of _____ , 2026.

_____

Notary Public

MY Commission Expires: _____

END OF SECTION

SECTION 00 41 20
NON COLLUSION AFFIDAVIT

Central County Fire & Rescue, House #06
1151 Jungs Station Road
St. Charles, Mo. 63303-6010

State of: Missouri

CITY of: Saint Charles

_____ , being duly sworn, deposes, states

they are _____ (Sole Owner, Partner, President, Secretary, etc.)

of_____ , said party making foregoing Bid, that such Bid is not made in interest of, or on behalf of, any undisclosed Person, Partnership, Company, Association, Organization or Corporation. That said Bid is genuine and not sham or collusive, that this Bidder has not directly or indirectly induced, solicited any other Bidder to put in a false or sham Bid and has not directly, indirectly colluded, conspired, connived, or agreed with any other Bidder, or anyone else to put in a sham Bid, or that anyone shall refrain from Bidding, that said Bidder has not, in any manner, directly, indirectly, sought by agreement, communication, conference with anyone, to fix Bid price of Bidder, or of any other Bidder, or to fix any Overhead, Profit or Cost Element of such Bid price, or that of any other Bidder, or to secure any advantage against this Public Body awarding Contract or anyone interested in this Proposed Contract, that all statements contained within Bid are true and further, that said Bidder has not, directly, indirectly, submitted their Bid Price or any breakdown thereof, or contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith to any Corporation, Partnership, Company, Association, Organization, Bid Depository, or to any Member, Agent thereof, or to any other individual, except to such person or persons, as have a Partnership or other financial interest within said Bidder in their general business.

Affiant further certifies that Bidder is not financially interested in, or financially affiliated with, any other Bidder for above stated Project.

SIGNED: _____

TITLE: _____

SUBSCRIBED and SWORN BEFORE ME, on THIS _____ DAY OF _____ , 2026.

_____

NOTARY PUBLIC

MY COMMISSION EXPIRES:_____

In completing this Form, any Title that is not applicable should be struck out. For example if Contractor is a Corporation and this Form is to be executed by its President, the words "Sole Owner, a Partner, Secretary, etc." should be struck out.

END OF SECTION

SECTION 00 52 00
AGREEMENT FORM

PART 1 GENERAL

1.01 A.I.A. STANDARD FORM OF AGREEMENT A101-2017

1.02 SAID AGREEMENT, YET TO BE EXECUTED, HAS BEEN ATTACHED TO THIS SECTION

A. A.I.A. Standard Form of Agreement A101-2017 Between Owner and Contractor, **where the basis of payment is a Stipulated Sum**.

1.03 RELATED REQUIREMENTS

A. Section 00 72 00 - A.I.A. General Conditions of the Contract for Construction A201-2017.

B. Section 00 73 00 - Supplementary Conditions.

PART 2 PRODUCTS; "NOT APPLICABLE, THIS PARTICULAR PROJECT"

PART 3 EXECUTION; "NOT APPLICABLE, THIS PARTICULAR PROJECT"

END OF SECTION

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AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor *where the basis of payment is a Stipulated Sum*

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

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

Central County Fire & Rescue
1220 Cave Springs Blvd.
St. Peters, MO 63376

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

TBD

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

Central County Fire & Rescue Station #6
1151 Jungs Station Road
St. Charles, MO 63303

The project includes new construction of a fire station building (Station #6) and associated site work on the existing site.

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

Archimages, Inc.
143 W. Clinton Place
St. Louis, MO 63122

The Owner and Contractor agree as follows.

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

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

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

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TABLE OF ARTICLES

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5 PAYMENTS

6 DISPUTE RESOLUTION

7 TERMINATION OR SUSPENSION

8 MISCELLANEOUS PROVISIONS

9 ENUMERATION OF CONTRACT DOCUMENTS

EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

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

ARTICLE 2 THE WORK OF THIS CONTRACT

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

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[ ] The date of this Agreement.

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

[ ] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

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

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

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of all work related to new construction, associated sitework, site utilities and anticipated soil treatment / remediation identified in the base bid per Geotech report.
(Check one of the following boxes and complete the necessary information.)

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[ ] Not later than ( ) calendar days from the date of commencement of the Work.

[ ] By the following date:

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

Portion of Work	Substantial Completion Date
N/A	

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

ARTICLE 4 CONTRACT SUM

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

§ 4.1.1 Bid Packages included in the Contract Sum:

§ 4.2 Alternates

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

Item	Price

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

Item	Price	Conditions for Acceptance

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

Item	Price

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

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

Time is of the essence. If the Contractor fails to achieve Substantial Completion of the Contractor's Work within the period of (TBD) calendar days from issuance of Notice to Proceed (as such Contract Time may be adjusted by time extensions otherwise permitted by the Contract Documents), the Contractor shall pay, and the Owner will assess, Liquidated Damages in the amount of $1,000.00 per day for each calendar day until Substantial Completion of the Contractor's Work is achieved. The Owner may deduct any such Liquidated Damages from any amount due or payable to the Contractor.
Final Completion: In the event that the Contractor fails to timely complete all punch list items and all requirements necessary to achieve Final Completion of the Contractor's Work within 30 calendar days following Substantial

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Completion, the Contractor shall pay, and the Owner will assess, Liquidated Damages in the amount of $1,000.00 per day for each calendar day until Final Completion of the Contractor's Work is achieved. The Owner may deduct any such damages from amounts otherwise due to the Contractor at Final Completion.

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

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

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

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

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the fifteenth day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the fifteenth day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than forty five (45) days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

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

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

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

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

- **.1** That portion of the Contract Sum properly allocable to completed Work;
- **.2** That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and supported by the following documentation:
  - **a)** proof of stored materials, photographs of the material clearly labeled as "Property of CCFR";
  - **b)** certificate of insurance for facility where materials are stored, with indication of coverage for the stored materials;
  - **c)** copies of itemized invoices for the materials from the vendor/supplier;
  - **d)** Bill of Sale;
  - **e)** Bailment Agreement.
- **.3** That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

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

- **.1** The aggregate of any amounts previously paid by the Owner;
- **.2** The amount, if any, for Work that remains uncorrected and for which the Architect has previously

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withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

5%
Retainage shall be invoiced and paid upon Final Completion of the Contractor's Work, less such amounts as are attributable to 150% of the value of incomplete work and unsettled claims.

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

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

Retainage shall be invoiced and paid upon Final Completion of the Contractor's Work, less such amounts as are attributable to 150% of the value of incomplete work and unsettled claims.

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

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

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum minus disputed sums and authorized deductions, shall be made by the Owner to the Contractor thirty (30) days after all of the following conditions have been satisfied:

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12.2.2 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 the Contractor has completed all Punch List items to the satisfaction of the Architect and Owner;

.3 a final Certificate for Payment has been issued by the Architect;

.4 the Contractor has delivered all closeout Documentation required under the Contractor Documents, which include:

i. one original final release of claims from Contractor (AIA G706 and G706A);

ii. operation and maintenance instructions/manuals;

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iii. marked-up as-built drawings;
iv. standard and extended warranties from every subcontractor;
v. list of names, addresses and telephone numbers for all subcontractors and others providing guarantees and warranties;
vi. one original of final certified payrolls from Contractor and all lower tiered subcontractors;
vii. original affidavit of compliance with prevailing wage laws from Contractor and all lower tiered subcontractors;
viii. testing and balancing reports, reviewed and approved by the Architect;
ix. any other closeout documents reasonably required by the Owner;

.5 the Contractor can provide proof that surveyed utility as-builts required by project documents have been accepted by AHJ's;

.6 the applicable governmental authorities have released to the Owner any escrows or deposits held for the restoration of the site, for stormwater or water quality measures, or for other Work that falls under this Contractor's scope; and

.7 the applicable governmental authorities have issued to the Owner the final use and occupancy permit for the Project; and

.8 The Contractor has provided proof of continuing insurance as required by the Contract.

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

§ 5.3 Interest

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

Compliant with the MO Prompt Payment Act.

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 6.2 Binding Dispute Resolution

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

[X] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[ ] Litigation in a court of competent jurisdiction

[ ] Other *(Specify)*

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

ARTICLE 7 TERMINATION OR SUSPENSION

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

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A201–2017.

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

ARTICLE 8 MISCELLANEOUS PROVISIONS

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

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

John LeDoux
Central County Fire and Rescue
1220 Cave Springs Blvd.
St. Peters, MO 63376

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

TBD

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

§ 8.5 Insurance and Bonds

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

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

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

§ 8.7 Other provisions:

Tax Exemption: The Owner intends to use the tax exempt purchase procedure authorized by Section 144.062 RSMo.

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- **.1** AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor
- **.2** AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- **.3** AIA Document A201™–2017, General Conditions of the Contract for Construction
- **.4** Building information modeling exhibit, dated as indicated below:
  (Insert the date of the building information modeling exhibit incorporated into this Agreement.)

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.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

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

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

[ ] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

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

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

OWNER *(Signature)*

(Printed name and title)

CONTRACTOR *(Signature)*

(Printed name and title)

OWNER *(Signature)*

(Printed name and title)

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AIA® Document A101® – 2017 Exhibit A

Insurance and Bonds

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

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

Central County Fire & Rescue Station #6
1150 Jungs Station Road
St. Charles, MO 63303

The project includes new construction of a fire station building (Station #6) and associated site work on the existing site.

THE OWNER:
(Name, legal status and address)

Central County Fire & Rescue
1220 Cave Springs Blvd.
St. Peters, MO 63376

THE CONTRACTOR:
(Name, legal status and address)

TBD

TABLE OF ARTICLES

A.1 GENERAL

A.2 OWNER'S INSURANCE

A.3 CONTRACTOR'S INSURANCE AND BONDS

A.4 SPECIAL TERMS AND CONDITIONS

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

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

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

ARTICLE A.1 GENERAL

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

ARTICLE A.2 OWNER'S INSURANCE

§ A.2 Not Used

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2)

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upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

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

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

§ A.3.2 Contractor's Required Insurance Coverage

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

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than one million dollars ($ 1,000,000.00) each occurrence, two million dollars ($ 2,000,000.00) general aggregate, and two million dollars ($ 2,000,000.00) aggregate for products-completed operations hazard, providing coverage for claims including

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

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

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

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surfaces, if the Work involves such coatings or surfaces.

.10 Claims related to earth subsidence or movement, where the Work involves such hazards.

.11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than one million dollars ($ 1,000,000.00) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

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

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than one million dollars ($ 1,000,000.00) each accident, one million dollars ($ 1,000,000.00) each employee, and one million dollars ($ 1,000,000.00) policy limit.

§ A.3.2.7 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than two million dollars ($ 2,000,000.00) per claim and two million dollars ($2,000,000.00) in the aggregate.

§ A.3.2.8 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than two million dollars ($ 2,000,000.00) per claim and two million dollars ($ 2,000,000.00) in the aggregate.

§ A.3.2.9 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than two million dollars ($ 2,000,000.00) per claim and two million dollars ($ 2,000,000.00) in the aggregate.

§ A.3.2.11 All-Risk Builders Rish Insurance: Unless specifically authorized By the Owner, the amount of such insurance shall not be less than the total contract price. The policy shall name as insured the Contractor and the Owner. The deductible shall be paid in full by the Contractor.

§ A.3.3 Contractor's Other Insurance Coverage

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

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.
(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

[ ] **§ A.3.3.2.1** Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner

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shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:
(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

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

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

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

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

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

Coverage	Limits
All-Risk Builders Risk Insurance	Not less than the total contract price.

§ A.3.4 Performance Bond and Payment Bond
The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:
(Specify type and penal sum of bonds.)

Type	Penal Sum ($0.00)
Payment Bond	Not less than the total contract price.
Performance Bond	Not less than the total contract price.

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

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS
Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

A.4.1 Subcontractors are not required to provide All-Risk Builders Risk Insurance.

A.4.2 Subcontractors with an initial contract amount less than $100,000.00 may provide liability coverage limits of $1,000,000.00 in addition to a $1,000,000.00 umbrella policy.

A.4.3 Subcontractors need not carry OCPL coverage if contractor's coverage is inclusive.

A.4.4 The Contractor and/or subcontractor shall furnish the Owner prior to beginning any work satisfactory proof of carriage of all the insurance required by this Contract, with the provision that policies shall not be canceled, modified, or non-renewed without thirty (30) days written notice to the Owner.

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SECTION 00 72 00
GENERAL CONDITIONS

GENERAL CONDITIONS OF THE CONTRACT

1.01 GENERAL CONDITIONS APPLICABLE TO THIS PARTICULAR CONTRACT HAVE BEEN ATTACHED TO THIS SECTION.

A. A.I.A. General Conditions of the Contract for Construction A201-2017.

RELATED REQUIREMENTS

2.01 REFERENCE SECTION 00 73 00 - SUPPLEMENTAY CONDITIONS FOR ADDITIONAL CONTENT.

END OF SECTION

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AIA® Document A201® – 2017

General Conditions of the Contract for Construction

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

Central County Fire & Rescue House #6
1151 Jungs Station Road
St. Charles, MO 63303

The project includes new construction of a fire station building (House #6) and associated site work on the existing site.

THE OWNER:
(Name, legal status and address)

Central County Fire & Rescue
1220 Cave Springs Blvd.
St. Peters, MO 63376

THE ARCHITECT:
(Name, legal status and address)

Archimages, Inc.
143 W. Clinton Place
St. Louis, MO 63122

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

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

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™–2017, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

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

§ 1.1.2 The Contract

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

§ 1.1.3 The Work

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

§ 1.1.4 The Project

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

§ 1.1.5 The Drawings

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

§ 1.1.6 The Specifications

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

§ 1.1.7 Instruments of Service

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

§ 1.1.8 Initial Decision Maker

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

§ 1.2 Correlation and Intent of the Contract Documents

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

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

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

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

§ 1.3 Capitalization

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

§ 1.4 Interpretation

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

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

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

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

§ 1.6 Notice

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

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

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or

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contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

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

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

§ 2.2 Evidence of the Owner's Financial Arrangements

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

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

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

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

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

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

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor

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has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

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

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

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

§ 2.4 Owner's Right to Stop the Work

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

§ 2.5 Owner's Right to Carry Out the Work

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

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

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

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

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

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

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any

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existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

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

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

§ 3.3 Supervision and Construction Procedures

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

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

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

§ 3.4 Labor and Materials

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

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

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

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§ 3.5 Warranty

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

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

§ 3.6 Taxes

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

§ 3.7 Permits, Fees, Notices and Compliance with Laws

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

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

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

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

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

§ 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

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

§ 3.9 Superintendent

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

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

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

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

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

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

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and

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similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

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

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

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

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

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

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

§ 3.13 Use of Site

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

§ 3.14 Cutting and Patching

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

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

§ 3.15 Cleaning Up

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

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

§ 3.16 Access to Work

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

§ 3.17 Royalties, Patents and Copyrights

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

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§ 3.18 Indemnification

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

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

ARTICLE 4 ARCHITECT

§ 4.1 General

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

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

§ 4.2 Administration of the Contract

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

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

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

§ 4.2.4 Communications

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

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

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

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

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

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

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

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

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

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

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

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ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

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

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

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

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

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

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

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

§ 5.3 Subcontractual Relations

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

§ 5.4 Contingent Assignment of Subcontracts

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

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

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.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

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

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

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

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

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

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

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

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

§ 6.2 Mutual Responsibility

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

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

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

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

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

§ 6.3 Owner's Right to Clean Up

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

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

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

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

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

§ 7.2 Change Orders

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

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

§ 7.3 Construction Change Directives

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

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

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

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

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

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otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

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

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

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

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

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

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

§ 7.4 Minor Changes in the Work

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

ARTICLE 8 TIME

§ 8.1 Definitions

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

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

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

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

§ 8.2 Progress and Completion

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

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

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

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

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

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

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

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

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

§ 9.2 Schedule of Values

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

§ 9.3 Applications for Payment

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

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

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

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

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

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

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

§ 9.5 Decisions to Withhold Certification

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

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.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;

.5 damage to the Owner or a Separate Contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

.7 repeated failure to carry out the Work in accordance with the Contract Documents.

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

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

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

§ 9.6 Progress Payments

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

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

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

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

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

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

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

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entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

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

§ 9.7 Failure of Payment

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

§ 9.8 Substantial Completion

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

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

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

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

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

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents.

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When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

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

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

§ 9.10 Final Completion and Final Payment

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

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

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

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

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

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

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ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

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

§ 10.2 Safety of Persons and Property

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

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

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

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

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

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

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

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

§ 10.2.8 Injury or Damage to Person or Property

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

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or

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polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

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

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

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

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

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

§ 10.4 Emergencies

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

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

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

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

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

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

§ 11.2 Owner's Insurance

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

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

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

§ 11.3 Waivers of Subrogation

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

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

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

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

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

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

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

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

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

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

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

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract

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Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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

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

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

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

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

§ 12.3 Acceptance of Nonconforming Work

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

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

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

§ 13.2 Successors and Assigns

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

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

§ 13.3 Rights and Remedies

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

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

§ 13.4 Tests and Inspections

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

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

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

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

§ 13.5 Interest

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

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a

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Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- **.1** that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract.

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§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

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If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

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§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

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§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

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SECTION 00 73 00
SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

A. These Supplementary Conditions amend and supplement the General Conditions defined in Document 00 72 00 - General Conditions and other provisions of the Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.

B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

1.02 MODIFICATIONS TO GENERAL CONDITIONS

A. ARTICLE 1.1 - GENERAL PROVISIONS
   1. Amend section 1.1.1 to include:
      a. The Contract Documents, which comprise the entire agreement between the Owner and the Contractor, are to also include the following:
         1) AIA 101-2017 and AIA 201-2017
         2) Supplemental General Conditions (this document)
         3) Bid Form and Bid Bond
         4) Contractor's Affidavit for Public Construction Projects
         5) Non-Collusion Affidavit
         6) Missouri Annual Wage Order
         7) All Addenda to the Bid Documents and all Modifications issued after execution of this Contract
      b. The documents listed above, together with this Agreement, form the Contract and are all as fully a part of the Contract as if attached to this Agreement or repeated herein.

B. ARTICLE 2.3 - INFORMATION AND SERVICES REQUIRED OF THE OWNER
   1. Delete section 2.3.6 and substitute the following section:
      a. 2.3.6: The Owner shall furnish the Contractor NO PRINTED copies of the Contract Documents. The Contractor may purchase copies at his own cost. Digital copies are available at no cost.

C. ARTICLE 3.1 - GENERAL
   1. Add the following sections:
      a. 3.1.4: The Contractor must agree that they and all of its subcontractors and sub-subcontractors will endeavor to the assignment of work based upon historical craft jurisdiction and should seek to resolve any disputes before they affect any delays in the progress of the work.
      b. 3.1.5: The Contractor must agree that all installing trades will provide employees who have participated in, or have employees currently participating in, a Department of Labor-approved apprenticeship program.
      c. 3.1.6: The Contractor must agree that they and all of its subcontractors and sub-subcontractors provide employer-subsidized health insurance.
      d. 3.1.7: The Contractor must agree that all installing trades provide, or participate in, an employer-sponsored pension plan.

D. ARTICLE 3.2 - REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR
   1. Add the following section:

a. 3.2.5: The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

E. ARTICLE 3.4 - LABOR AND MATERIALS
   1. Add Section 3.4.2.1 to Section 3.4.2:
      a. .2.1: After the Contract has been executed, the Owner and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 1 of the Specifications). By making requests for substitution, the Contractor:
         1) .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified.
         2) .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified.
         3) .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
         4) .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
   2. Add the following to the end of Section 3.4.2:
      a. .2.2: The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for reviewing the Contractor's proposed substitutions and making agreed-upon changes in the Drawings and Specifications resulting form such substitutions.
   3. Add the following to the end of Section 3.4.3:
      a. 3.4.3.1: The Contractor / Sub-Contractors / Sub-Sub-Contractors shall provide a sworn affidavit and verification that they are registered with the U.S. Citizenship and Immigration Services E-Verify service and have records of all employees working on this project. Provide records to Owner.
      b. 3.4.3.2: Any construction employees intending to work on the job site shall complete the OSHA 10 Hour Training Course before their scope of work begins. On site Superintendent shall keep a three-ring binder with names and photocopies of all certificates.
      c. 3.4.3.3: The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the Work to full completion in the manner and time required by the Contract Documents. All workmen shall have sufficient skill and experience to properly perform the work assigned to them.

F. ARTICLE 3.6 - TAXES
   1. The Owner is a Tax Exempt Not for Profit. Obtain proper paperwork from the Owner for exemption.

G. ARTICLE 3.9 - SUPERINTENDENT
   1. Add Section 3.9.1.1 to Section 3.9.1:
      a. This superintendent person shall be a non-working superintendent who will be responsible for the satisfactory progression of the Work and to ensure that all work is being completed in accordance with the Plans and Specifications. The superintendent shall be satisfactory to the Owner and shall not be changed except with the consent of the Owner. The superintendent shall also relay any conflicts or discrepancies that arise in the plans to the Owner’s representative for resolution or interpretation.

H. ARTICLE 3.12 - SHOP DRAWINGS, PRODUCT DATA AND SAMPLES
   1. Add the following section:
      a. .11: The Architect's review of Contractor's submittals will be limited to examination of an initial submittal and one (1) resubmittal. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals.

I. ARTICLE 4.2 - ARCHITECT'S ADMINISTRATION OF THE CONTRACT
   1. Add the following section:
      a. .2.1: The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work.

J. ARTICLE 7 - CHANGES IN THE WORK
   1. Add the following Section 7.1.4 to Section 7.1:
      a. .4: The combined overhead and profit included in the total cost to the Owner for a change in the Work shall be based on the following schedule:
         1) .1 For the Contractor, for Work performed by the Contractor's own forces, ten (10) percent of the cost.
         2) .2 For the Contractor, for Work performed by the Contractor's Subcontractors, five (5) percent of the amount due the Subcontractors.
         3) .3 For the Subcontractor involved, for Work performed by that Subcontractors own forces, ten (10) percent of the cost.
         4) .4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, five (5) percent of the amount due the Sub-subcontractor.
         5) .5 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.7.
         6) .6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over $2,000 be approved without such itemization.

K. ARTICLE 9.11 - LIQUIDATED DAMAGES (add)
   1. Add the following Section 9.11.1
      a. In the event Substantial Completion of any aspect of the Work is not achieved by the time specified, the Contractor shall pay the Owner, liquidated damages in the amount of three thousand dollars (3,000.00) per calendar day (including weekends and holidays) after, until Substantial Completion is achieved. The parties acknowledge and agree that the provisions of Section 8.3 of the AIA A201-2017 - General Conditions of the Contract for Construction entered into by the parties and any other provisions of the Contract Documents relating to justified delays or extensions of time, shall not preclude the payment and recovery of liquidated damages required pursuant to section 3.3 of AIA A101-2017 Standard Form of Agreement Between Owner and Contractor. The above provisions calling for the payment of liquidated damages are provided herein in light of the difficulty of determining the amount of damages which may result to the Owner from the Contractor's failure to achieve Substantial Completion on or before time specified. The parties agree that the liquidated damages set forth above are reasonable, and not a penalty, based upon the facts and circumstances of the parties at the time of entering into this Agreement and with due regard to future expectations. The payment of liquidated damages to the Owner shall not be construed as a release or waiver by the Owner of the right to prevent any delays in Substantial Completion through equity or otherwise.

L. ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

1. Add the following Section 10.2.3.1 and10.2.3.2 to Section 10.2.3:
    a. 10.2.3.1: During the progress of the Work, the Contractor shall protect all existing and new work from injury or defacement and particular care shall be taken of all finished parts. Any damage occurring to the work from any cause, including any damage caused by others and utilities, shall be properly repaired and/or replaced at the Contractor's expense to the satisfaction of the Owner or Owner's representative.
    b. 10.2.3.2: The Contractor is also responsible for any repair and/or maintenance required throughout the project limits from Notice to Proceed until final acceptance of the Work by the Owner. These maintenance items or repairs include, but are not limited to: pothole repair, resurfacing temporary roads, maintenance of utility cuts, street sweeping, and mowing.

M. ARTICLE 11 - INSURANCE AND BONDS
1. Add the following Sections 11.1.1.1 through 11.1.1.4 to Section 11.1.1:
    a. .1.1 The limits for Worker's Compensation and Employers' Liability insurance shall meet statutory limits mandated by State and Federal Laws.
    b. .1.2 The limits for Commercial General Liability insurance including coverage for Premises-Operations, Products-Completed Operations, Contractual Liability, Personal Injury and Broad Form Property Damage (including coverage for Explosion, Collapse and Underground hazards) shall be as follows:
        1) $1,000,000.00 Each Occurrence
        2) $2,000,000.00 General Aggregate
        3) $1,000,000.00 Personal and Advertising Injury
        4) $2,000,000.00 Products-Completed Operations Aggregate
        5) $10,000,000.00 Excess Umbrella
        6) .1 The policy shall be endorsed to have the General Aggregate apply to this Project only.
        7) .2 The Contractual Liability insurance shall include coverage sufficient to meet the obligations in AIA Document A201-2017 under Section 3.18.
        8) .3 Products and Completed Operations insurance shall be maintained for a minimum period of at least five (5) years after the expiration of the period for correction of Work.
    c. .1.3 Automobile Liability insurance (all owned, non-owned and hired vehicles) for bodily injury and property damage: $1,000,000.00 Each Accident
    d. .1.4 The Contractor shall at the Contractor's own expense provide insurance coverage for materials stored off the site after written approval of the Owner at the value established in the approval, and also for portions of the Work in transit or at the project site until such materials are permanently attached to the Work.
    e. .1.5 The Contractor shall purchase and maintain Builder's Risk Insurance (also known as Course of Construction Insurance) covering the entire work of the project include, but not limited to property damage, theft, vandalism, fire, lightning, arson, collapse, windstorm, hail, water, earth movement, flood, water intrusion, backup sewers and drains, mechanical breakdown.
2. Add the following Section 11.2.2.1 to Section 11.2.2:
    a. .2.1 The insurance required by Section 11.2 is not intended to cover machinery, tools or equipment owned or rented by the Contractor that are utilized in the performance of the Work but not incorporated into the permanent improvements. The Contractor shall, at the Contractor's own expense, provide insurance coverage for owned or rented machinery, tools or equipment, which shall be subject to the provisions of Section 11.3.

N. 11.1.2.1 PERFORMANCE AND PAYMENT BOND
1. Add Section 11.1.2.1 to Section 11.1.2:

a. .2.1 The 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% of the Contract Sum.
b. .2.2 The Contractor shall deliver the required bonds to the Owner not later than five business days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement for the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.
c. .2.3. 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.

O. ARTICLE 13 MISCELLANEOUS PROVISIONS
1. Add the following Section 13.6:
a. 13.6: Truck and Traffic Restrictions:
1) 13.6.1: Construction Truck Traffic is not allowed on the existing Firehouse Site which will stay in operations during construction of new house.
2) 13.6.2: Traffic Control shall include Flagmen to stop traffic as needed for deliveries, and advance warning signs indicating that construction vehicles are entering and leaving the site.
2. Add the following Section 13.7
a. 13.7 Firearms
1) 13.7.1: There shall be absolutely no firearms carried by any individual on any Owner's work site.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

3.01 END OF DOCUMENT

END OF SECTION

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SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.01 PROJECT

A. Project Name: **Central County Fire & Rescue, House #06.**

B. Owner Representative's Name: **Mr. John LeDoux, Assistant Chief.**

C. Architect;s Company Name: **Archimages, Inc.**

D. Architect's Representative:
   1. **Joe McKinney.**

1.02 CONTRACT DESCRIPTION

A. Contract Type: Single Prime Contract, Standard Form of Agreement, where basis of Payment is a **Stipulated Sum**.

1.03 DESCRIPTION, SCOPE OF WORK

A. Scope of Work, this particular Project, as delineated within Contract Documents.

1.04 WORK BY OWNER; "NOT APPLICABLE, THIS PARTICULAR PROJECT"

1.05 OWNER OCCUPANCY

A. Owner intends to occupy Project **immediatel**y, upon previously established Project Substantial Completion Date, no later than 1:00 p.m. local time.

B. Owner intends to occupy select portions of Project, prior to previously established Project Substantial Completion Date.

C. Fully cooperate, coordinate with Owner's Representative, as required to eliminate any conflicts, facilitate Owner's Business Operations.

D. Schedule, execute entire Project Scope of Work, as required to accommodate Owner's immediate occupancy of same.

1.06 CONTRACTOR USE OF EXISTING POJECT SITE

A. Construction Operations:
   1. Coordinate, conduct all Construction activities only in ways that will limit disturbance to Existing Project Site.

B. Facilitate use of Existing Project Site as required to allow:
   1. Owner Occupancy.
   2. Work by Others.
   3. Use of Existing Project Site by General Public.

C. Provide access to and from Existing Project Site as required by Law, Owner and those Local Authorities having Jurisdiction.
   1. Emergency Building Exits, During Construction: Keep all exits required by code open during entire Construction period.
   2. **Do not** obstruct any roadways, sidewalks or public ways.

D. Existing building environments **may not** be used.

E. Time Restrictions:
   1. Limit all loud, noisy Work to local hours between 8:00 a.m. and 5:00 p.m.

F. Utility Outages and Shutdown:
   1. Limit all disruptions of any Utility Services to those hours Existing Project Site is unoccupied.
   2. **Do not** disrupt, shut down any life safety systems, including but not limited to fire sprinklers, fire alarm system, without first providing minimum (20) Twenty Business Days notice to both Owner and those Local Authorities having Jurisdiction.

3. Limit shutdown of any Utility Services to maximum (4) Four hours at a time, scheduled with minimum (10) Ten Business Days notice to Owner and those Local Authorities having Jurisdiction.
4. **Do not** allow any accidental disruption of Utility Services.

1.07 WORK SEQUENCE

A. **Entire Project Scope of Work shall be implemented within (1) One individual Phase.**

B. Coordinate Entire Construction Schedule, including all Existing Project Site operations with Owner's Representative, Architect and those Local Authorities Having Jurisdiction, prior to the commencement of any Work.

1.08 DESIGN BUILD WORK

A. Mechanical, Electrical, Plumbing, Fire Protection and Low Voltage Scope of Work aspects shall be provided via design build basis. Contract Documents indicate basic locations of items and provide limited direction for design of systems. Contractor is required to provide services of Professional Engineers, licensed within State in which this paticular Project is located, as required to complete entire Systems Design. Design process for said systems shall include coordination with Architect, Engineers, Owner and thoroughly detailed Submittal of Design for review. Multiple design submittals, if necessary, shall be required.

1.09 SPECIFICATION SECTIONS APPLICABLE TO EVERY CONTRACT

A. Provisions of those Sections listed below shall apply to each Contract.

B. Section 01 20 00 - Price and Payment Procedures.

C. Section 01 21 00 - Allowances.

D. Section 01 22 00 - Unit Prices.

E. Section 01 23 00 - Alternates.

F. Section 01 30 00 - Administrative Requirements.

G. Section 01 40 00 - Quality Requirements.

H. Section 01 50 00 - Temporary Facilities and Controls.

I. Section 01 60 00 - Product Requirements.

J. Section 01 70 00 - Execution and Closeout Requirements.

K. Section 01 78 00 - Closeout Submittals.

1.10 CONTRACT CONSTRUCTION

A. Division 01 - General Requirements:
1. Those Specification Sections listed above.
2. Provide multiple Construction Debris receptacles and remove all debris, refuse from Existing Project Site on a daily basis.
3. Provide Erosion control structures as directed by Civil Engineer, Architect.
4. Provide Temporary water control as directed by Civil Engineer, Architect.
5. Provide thorough Final cleaning of entire Existing Project Site as directed by Architect, Owner's Representative.

B. Execute, provide entitre Project Scope of Work.

PART 2 PRODUCTS; " NOT APPLICABLE, THIS PARTICULAR PROJECT"

PART 3 EXECUTION; "NOT APPLICABLE, THIS PARTICULAR PROJECT"

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 00 52 00- Agreement Form Document.

B. Section 01 21 00 - Allowances.

C. Section 01 22 00 - Unit Prices.

1.02 SCHEDULE OF VALUES

A. Execute Schedule of Values Form.

B. Submit Schedule of Values in PDF format no later than (10) Ten Business days, following issue date of Owner, Contractor Agreement.

C. Format: Utilize Table of Contents, this particlar Project,.as required to accurately dentify each line item, with number and title corresponding to a given Specifications Section. Identify site mobilization and bonds and insurance.

D. Include within each line item, amount of all Allowances identified within Contract Documents. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

E. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.

F. Any Revised Schedule **shall list all** previously fully executed Change Orders, within each Application For Payment.

1.03 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at those intervals stipulated within Agreement.

B. Use Form AIA G702 and Form AIA G703, edition as stipulated in Agreement.

C. Electronic media printout including equivalent information may be considered in lieu of standard form specified; submit Sample to Owner, Architect for rwvuew.

D. **Those Forms authored by hand, will not be reviewed or accepted.**

E. For each item, provide seperate column, listing each of the following:
   1. Item Number.
   2. Description of work.
   3. Scheduled Values.
   4. Previous Applications.
   5. Work in Place and Stored Materials under this Application.
   6. Previously fully Executed Change Orders, only.
   7. Total Completed and Stored to Date, as of Application Date.
   8. Current, accurate Percentage, Construction Completion.
   9. Balance to Finish.

F. Execute certification via dated, signature of previously authorized Officer.

G. Use only that data from previously approved Schedule of Values. Provide dollar value within each column, for each line item of Work performed and any stored Building Materials.

H. List each peviously fully Executed Change Order, as separate line item, including Change Order Number and dollar amount, as for an original item of Work.

I. Submit each Application for Payment within PDF format.

J. Include following within each Application for Payment.
   1. Transmittal letter as identified within Section 01 30 00 Administrative Requirements.

2. Thoroughly detailed, dated Construction Progress Schedule, updated, current as delineated within Section 01 30 00 Administrative Requirements.
3. Current Construction photographs as outlined within Section 01 30 00 Administrative Requirements.
4. Partial Release of Liens from thoese Subcontractors, Vendors. corresponding to dollar amounts requested.
5. Lien waivers.
6. Project record documents as outlined within Section 01 78 00- Closeout Submittals.
7. Affidavits attesting to all off Existing Projest Site Stored Builing Materials.
    a. This information must include photographs and accurately Dated Certificates of Insurance.

K. Whenever Architect requires substantiating information, submit data justifying all dollar amounts. Provide one copy data, including Cover Letter for each copy Submittal. Indicate Application Number, Date and Line Item via number and description.

1.04 MODIFICATION PROCEDURES

A. **Submit detailed Contact Information, including email addresss, cell phone number,** for those individuals authorized to receive change documents and who will be responsible for informing others within Contractor's employ, or Subcontractors of changes to Contract Documents.

B. For those changes, which advance pricing is desired, Archimages, Inc. may issue documentation including description of proposed changes with revised drawings. Contractor shall prepare and submit thoroughly detailed fixed price quotation within (10) Ten buiness days, of issue date, Architect's documentation.

C. Computation of Change in Contract Amount: As specified within Agreement and Conditions of Contract.
1. For change requested by Architect for work falling under a fixed price contract, amount will be based on Contractor's price quotation.
2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
3. For pre determined unit prices and quantities, the amount will based on fixed unit prices.
4. For change ordered by Architect without a quotation from Contractor, amount will be determined by Architect based on Contractor's substantiation of costs, as specified for Time and Material Work.

D. Substantiation of Costs: Provide throughly detailed information, as required for Architect, Engineer's evaluation, review.
1. Provide following data:
    a. Quantities of all Products, Labor, and Equipment.
    b. Taxes, insurance, and bonds.
    c. Overhead and profit.
    d. Thooughly detailed justification for any change in Contract Time.
    e. Thoroughly detailed credit for all deletions.
2. Support each claim for additional costs with additional information:
    a. Origin and date of claim.
    b. Dates and times work was performed, and by whom.
    c. Time records and wage rates paid.
    d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

E. Execution of Change Orders: Archimages, Inc shall issue Change Orders for review, signatures of all parties.

F. Following full execution of given Change Order, immediately revise Schedule of Values and Application for Payment forms, as required to accurately reflect all previously fully executed Change Orders, including separate line items and adjust Total Contract Sum accordingly.

G. Promptly revise progress schedules, as required to accurately reflect all changes within Contract Time and resubmit for review by Owner, Architect.

H. Promptly enter all changes within Project Record Documents.

1.05 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment, as previously specified for progress payments, identifying Final, accurate Total adjusted Contract Sum, all previous payments and Total Sum remaining due.

B. **Application for Final Payment will not be considered, until following has been accomplished:**

1. All closeout procedures, documentation identified within Section 01 70 00 - Execution and Closeout Requirements.

PART 2 PRODUCTS; "NOT APPLICABLE, THIS PARTICULAR PROJECT"...

PART 3 EXECUTION; "NOT APPLICABLE, THIS PARTICULAR PROJECT"...

END OF SECTION

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SECTION 01 22 00
UNIT PRICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Unit Prices.

1.02 RELATED REQUIREMENTS

A. Section 00 21 13 - Instructions to Bidders.

B. Section 00 31 00 - Available Project Information.

C. Section 00 41 01 - Supplemental Bid Information.

D. Section 01 20 00 - Price and Payment Procedures.

1.03 COSTS INCLUDED

A. Unit Prices included within Bid Form shall include full compensation, all necessary Labor, Products, Tools, Equipment, Plant Transportation Services, Incidentals, Erection, Application and Installation of said Scope of Work, including all Overhead and Profit.

1.04 UNIT QUANTITIES SPECIFIED

A. Those quantities indicated within Bid Form shall be for Bidding and Contract purposes only. Quantities and measurements for actual Work shall determine Final Payment Dollar Amount.

1.05 MEASUREMENT OF QUANTITIES

A. Measurement methods delineated within individual Specification Sections complement the criteria of this Section. In the event of conflict, those requirements of individual Specification Sections shall govern.

B. Take all measurements, compute all quantities. All measurements, quantities will be verified by Engineer, Architect accordingly.

C. Assist, via providing all necessary equipment, Workers, survey personnel.

D. Measurement Devices:
   1. Weigh Scales: Inspected, tested and certified by applicable state Weights and Measures department within the last (6) Six months.
   2. Platform Scales: Of sufficient size, capacity as required to accommodate said conveying vehicle.
   3. Metering Devices: Inspected, tested, certified by applicable state department within the last (6) Six months.

E. Measurement by Weight: Concrete reinforcing steel, rolled, formed steel all other metal shapes will be measured by handbook weights. Welded assemblies will be measured by scale weight.

F. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.

G. Measurement by Area: Measured by square dimension using mean length and width or radius.

H. Linear Measurement: Measured by linear dimension, item centerline or mean chord.

I. Stipulated Price Measurement: Items measured by weight, volume, area, or linear means, as a completed item, unit of the Work.

J. Perform all surveys required to determine actual accurate quantities, including control surveys, as required to establish measurement reference lines. Notify Architect prior to beginning any Work.

K. Contractor's Engineer Responsibilities: Sign surveyor's field notes, maintain duplicate field notes, calculate, certify all quantities required for any payment purposes.

1.06 PAYMENT

A. Payment for any Work governed by Unit Prices shall be made on basis of actual, accurate measurements, quantities of said Work that has been incorporated into or made necessary by Scope of Work and previously accepted by Architect, Owner, multiplied by corresponding Unit Price.

B. **Payment will not be made for following:**
   1. Products wasted or disposed of within manner not acceptable.
   2. Products determined unacceptable prior to, or following placement.
   3. Products not completely, properly unloaded from transporting vehicles
   4. Products placed beyond lines, levels of required Work.
   5. Products remaining, after completion of said Scope of Work.
   6. Loading, hauling, disposing of rejected Products.
   7. Products Damaged prior to placement.

1.07 DEFECT ASSESSMENT, PROTECTION OF WORK

A. **Replace all Defective Work, this Section, immediately.**

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

1.08 SCHEDULE OF UNIT PRICES

A. Unit Price No. 01: Removal, disposal of all unsatisfactory soils and imports. Placement of all Finish Grading, via previously approved Geotechnical Engineered soils.

B. Unit Price No. 02: Treatment of all unsatisfactory soils scheduled to remain.

C. Unit Price No. 03: Removal, disposal of all Rippable Rock.

D. Unit Price No. 04: Removal, disposal of all Non Rippable Rock.

E. Unit Price No. 05: Removal, disposal of all Trench Rock.

F. Unit Price No. 06: Removal, disposal of all existing buried concrete and structures.

G. Unit Price No. 07: Placement of all Engineer approved Lean Concrete, as required by soils remediation.

H. Unit Price No. 08: Haul off of all surplus soils and spoils.

I. Unit Price No. 09: Placement and Finish Grading of all soils imports.

J. Unit Price No. 10: All One inch Clean Rock placement and compaction.

K. Unit Price No. 11: All One inch Minus Rock placement and compaction.

L. Unit Price No. 12: All Two inch Clean Rock placement and compaction.

M. Unit Price No. 13: All Two inch Minus Rock placement and compaction.

N. Unit Price No. 14: All Topsoil placement, compaction and Finish Grading.

PART 2 PRODUCTS; "NOT APPLICABLE, THIS PARTICULAR PROJECT"...

PART 3 EXECUTION; "NOT APPLICABLE, THIS PARTICULAR PROJECT"...

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Web Based project software service.

C. Electronic document submittal service.

D. Preconstruction meeting.

E. Progress meetings.

F. Construction progress schedule.

G. Contractor's Daily Reports.

H. Progress photographs.

I. Coordination drawings.

J. Submittals for review, information, Project Closeout.

K. Number of copies of submittals.

L. Requests for Information procedures.

M. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions.

B. Section 00 73 00 - Supplementay Conditions.

C. Section 01 60 00 - Product Requirements.

D. Section 01 70 00 - Execution and Closeout Requirements.

E. Section 01 78 00 - Closeout Submittals.

F. Section 01 79 00 - Demonstration and Training.

G. Section 01 91 13 - General Commissioning Requirements

H. Section 01 60 00 - Product Requirements.

I. Section 01 70 00 - Execution and Closeout Requirements.

J. Section 01 78 00 - Closeout Submittals.

K. Section 01 91 13 - General Commissioning Requirements.

1. Where submittals are indicated for review by both Architect and the Commissioning Authority, submit one extra and route to Architect first, for forwarding to the Commissioning Authority.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ALL STANDARDS"...

A. AIA G716 - Request for Information; 2004.

B. AIA G810 - Transmittal Letter; 2001.

C. CSI/CSC Form 12.1A - Submittal Transmittal; Current Edition.

D. CSI/CSC Form 13.2A - Request for Information; Current Edition.

1.04 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

B. Provide the following types of submittals to Architect:

1. Requests for Information (RFI).

2. Requests for Substitution.
3. Shop drawings, product data, and Product Samples.
4. Testing and Inspection reports.
5. Design data.
6. Manufacturer's written Instructions and Feld Reports.
7. Applications for Payment and Change Order Requests.
8. Progress schedules and Updated Progress Schedules.
9. Coordination drawings.
10. Correction Punch List and Final Correction Punch List.
11. Closeout Submittals.

1.05 PROJECT COORDINATOR

A. **Project Coordinator; As designated by Architect.**

B. Fully cooperate with designated Project Coordinator, in allocation of mobilization areas, Existing Project Site; for field offices, sheds, access, traffic, and parking facilities.

C. During construction, fully coordinate use of Existing Project Site, facilities via designated Project Coordinator.

D. Fully comply with Project Coordinator's procedures for intra project communications; submittals, reports, records, schedules, coordination drawings, recommendations; and resolution of any ambiguities, conflicts.

E. Fully comply with all instructions, Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is outlined within Section 01 10 00 - Summary.

F. Coordinate field engineering and layout work under instructions of the Project Coordinator.

G. Provide the following types of submittals to Architect;
1. Shop drawings, product data, and Product samples.
2. Testing and Inspection Reports.
3. Design data.
4. Manufacturer's written Instructions and Field Reports.
5. Applications for Payment.
6. Construction Progress Schedules.
7.
8. Correction Punch List and Final Correction Punch List.
9. Closeout Submittals.

PART 2 PRODUCTS - "NOT APPLICABLE"...

PART 3 EXECUTION

3.01 WEB BASED PROJECT SOFTWARE SERVICE

A. Web Based Project Software Service: Contractor shall provide, administer and use web based project software, as required to host, manage all Project communications and documentation.
1. Include, **at minimum**, the following features:
a. Project directory, including Owner, Contractor, Subcontractors, Architect, Engineers, and any other entities involved within Project. Include names of contact persons and contact information for each entity.
b. Access control for each entity and for each workflow process to determine each entity's digital rights to create, modify, view, and print documents.
c. Workflow planning, allowing customization of workflow for each project entity.
d. Creation, logging, tracking, and notification for project communications.
e. Tracking of project communication statuses in real time, including timestamped response log.
f. Processing and tracking of Payment Applications.
g. Processing and tracking of Contract Modifications.

h. Creation and distribution of all Meeting Minutes.
i. Document management for all drawings, specifications, coordination drawings.
j. Management of Construction progress photographs.
k. Mobile device compatibility.
l. Creation of data analytics reports.
m. Creation and export of editable logs for software functions. Provide Owner, Architect, and Engineers with rights, ability to download Logs.

2. Cost: Contractor shall pay entire cost of service.
3. Provide up to (36) Thirty Six user licenses for use by Owner, Architect, Engineers, any other entities involved within this particular Project.
4. Fully comply with Software service's current published licensing agreements.
5. Training: Provide training session for all users of software service.
   a. Owner's Representatives shall be included within this training.
6. Project Closeout: Architect shall determine when to terminate software service for this particular Project. Contractor shall be responsible for obtaining archive copies of all files for Owner, Architect.

3.02 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF) format and transmitted via an Internet based submittal service that receives, logs and stores documents, provides electronic stamping and signatures, and notifies addressees via email.
   1. Besides submittals for review, information, and closeout, this procedure applies to Requests for Information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.
   2. Contractor shall be required to use this service.
   3. It is Contractor's responsibility to submit documents within allowable format.
   4. Subcontractors, suppliers, Architect and Engineers shall be permitted to use said Service at no charge.
   5. Users of Service need an email address, internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com),
   6. Paper document transmittals will not be reviewed; emailed electronic documents will be reviewed.
   7. All other specified submittal and document transmission procedures apply.

B. Cost: Entire Cost of Service shall be paid by Contractor.

C. Training: One web based training session will be arranged for all participants, with representatives of Contractor participating.
   1. Owner Representative shall be included within this training.

D. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.03 PRECONSTRUCTION MEETING

A. Contractor shalll schedule meeting following issuance of Notice of Award.

B. Attendance Required:
   1. Owner.
   2. Architect.
   3. Contractor.

C. Agenda:
   1. Execution of Owner Contractor Agreement.

2. Submission of executed bonds and Insurance Certificates.
3. Distribution of Contract Documents.
4. Submission of list of subcontractors, list of products, schedule of values and Construction Progress schedule.
5. **Designation of personnel representing all parties to Contract.**
6. Procedures and processing of field decisions, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.
8. Scheduling activities of a Geotechnical Engineer.

D. Contractor shall record minutes and distribute copies withiin (2) Two Calendar days, immediately following Meeting, to Owner, Architect, all participants, and any others affected by decisions made during said Meeting.

3.04 SITE MOBILIZATION MEETING

A. **Contractor** shall schedule Meeting at Existing Project Site.

B. Attendance Required:
1. Contractor's Project Manager, Existing Project Site Superintendent.
2. Owner's Representative.
3. Architect.

C. Agenda:
1. Use of premises by Owner and Contractor.
2. Owner's requirements.
3. Survey and building layout.
4. Security and housekeeping procedures.
5. Schedules.
6. Application for Payment procedures.
7. Procedures for testing and Inspections.
8. Procedures for maintaining record documents.
9. Requirements for start up of equipment.

D. Contractor shall record minutes and distribute copies within (2) Two Calendar days, immediately following Meeting, to Owner, Architet, all participants and any others affected by those decisions made during said Meeting.

3.05 PROGRESS MEETINGS

A. Contractor shall schedule and administer all meetings throughout entire progress of this particular Project.

B. Contractor shall make all arrangements for Meetings, prepare agenda with copies for all participants.

C. Attendance Required:
1. Contractor's Project Manager and Site Superintendent.
2. Owner.
3. Architect.

D. Agenda:
1. Review **Seperate** hard copy of previous Meetinhg minutes.
2. **Review all Work currently in progress.**
3. Field observations and decisions.
4. Identification, discussion of any issues that may impede planned progress.
5. Review Submittals Schedule and current status of Submittals.
6. Review RFI Log and current status of same.
7. Review of all off site fabrication and delivery schedules.
8. Maintenance of current Construction Progress Schedule.
9. All corrective measures, as required to regain original Projected Construction Schedule.

10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and Work standards.
13. Effect, if any, of proposed changes on Construction Progress Schedule.
14. Any other business relating to said Work.

E. Contractor shall record minutes and distribute copies within (2) Two Calendar days, immediately following meeting, to Owner, Architect, all prticipants and any others affected by those decisions made during said Meeting.

3.06 CONSTRUCTION PROGRESS SCHEDULE

A. Within (10) Ten Calendar days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

B. If preliminary schedule requires revisions, submit fully revised schedule within (5) FIve Calendar days.

C. Within (10) Ten Calendar days, following review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that all major contractors have reviewed and accepted proposed schedule.

D. Within (5) Five Calendar days following joint review, submit complete schedule.

E. Submit an updated, revised Construction Progress Schedule with each Application for Payment, **dated as corresponding Application for Payment. Payment will not be approved without receipt of updated Construction Progress Schedule.**

3.07 DAILY CONSTRUCTION REPORTS

A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.

B. In addition to transmitting electronically a copy to Owner and Architect, submit two printed copies at weekly intervals.
   1. Submit in format acceptable to Owner, Architect

C. Prepare a daily construction report recording the following information concerning events at ExistinProject site and project progress:
   1. Date.
   2. High and low temperatures, and general weather conditions.
   3. List of all Subcontractors presnt at Existing Project site.
   4. Approximate count of all personnel present at Existing Project site.
      a. Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
   5. All major equipment included within Existing Project site.
   6. All Materials deliveries.
   7. Safety, environmental, or industrial relations incidents.
   8. Meetings and significant decisions.
   9. Unusual events (submit a separate special report).
   10. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
   11. Meter readings and or similar recordings.
   12. Emergency procedures.
   13. Directives and any requests via those Authorities Having Jurisdiction.
   14. Change Orders received and implemented.
   15. Testing and or inspections performed.

16. List of verbal instruction given by Owner's Representative, Architect.
17. Signature of Contractor's authorized representative.

3.08 PROGRESS PHOTOGRAPHS

A. Submit minimum (12) Twelve photographs with each Application for Payment, taken not more than (2) Two Calendar days, prior to submission of said Application.

B. Submit additional new photographs at least once per month, within (3) Three Calendar days, after having been taken.

C. Maintain one set of all photographs at Existing Project Site for future, historical reference.

D. Photography Type: Digital; electronic files.

E. Provide photographs of Existing Project Site and Construction progress, throughout progression of said Work, produced by an experienced photographer, acceptable to Owner's Representative, Architect..

F. Take photographs as evidence of existing project conditions as follows:
   1. Interior views.
   2. Exterior views.

G. Views:
   1. Provide aerial photographs from four cardinal views at each specified time, until structure is enclosed.
   2. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
   3. Consult with Architect for instructions on views required.
   4. Provide factual presentation.
   5. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.
   6. Point of View Sketch: Provide sketch identifying point of view of each photograph.

H. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email only.
   2. File Naming: Include project identification, date and time of view, and view identification.
   3. Point of View Sketch: Include digital copy of point of view sketch with each electronic submittal; include point of view identification in each photo file name.
   4. Photo CD(s): Provide 1 copy including all photos cumulative to date and PDF file(s), with files organized in separate folders by submittal date.
   5. Hard Copy: Printed hardcopy (grayscale) of PDF file and point of view sketch.

I. Optical Slides: 35 mm, color; 1 set assembled into transparent slide holder sheets for 3-ring binder.
   1. Binders: Provide one 2-inch binder with initial submittal.
   2. Identification: Mark each slide with project identification, date and time of view, and view identification.
   3. Point of View Sketch: Include printed copy of point of view sketch with each submittal; include point of view identification on each slide.

J. Photographer Quality Prints: Full color; three prints of each view.
   1. Glossy; smooth texture; white tint; single weight; high contrast.
   2. Size: 8 by 10 inch; mounted for binder and tabs.
   3. Identify each print on back. Identify name of Project, contract number, phase, orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of exposure.
   4. Assemble prints into transparent holder sheets for three ring binder.
   5. Binders: Provide one 2-inch binder with initial submittal.

6. Point of View Sketch: Include printed copy of point of view sketch with each submittal; include point of view identification on each print.
7. Negatives: Include negatives with print submittal, arranged in chronological sequence, with typed table of contents.
8. Negatives: Negatives will remain property of photographer; require that photographer maintain said negatives for (15) Fifteen Years from date of previously established Project Substantial Completion Date.

3.09 COORDINATION DRAWINGS

A. Provide all information required by Project Coordinator for preparation of coordination drawings.

B. Thoroughly review all drawings prior to submission to Architect.

3.10 REQUESTS FOR INFORMATION (RFI)

A. Definition: Contractor's Request seeking one of the following:
1. An interpretation, amplification, clarification of some requirement of Contract Documents arising from an inability to determine from them the exact material, process, or systems to be installed; or when said elements of construction are required to occupy the same space (interference); or when an item of Work is described differently within more than one place in Contract Documents.
2. A resolution to an issue which has arisen, due to existing field conditions that may affect design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for additional information, pertainng to Contract Documents. Failure to submit said RFI in a timely manner **is not** a legitimate cause for claiming additional costs or delays with in execution of the Work.
1. Prepare a separate RFI for each specific item.
   a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
   b. **Do not** forward requests which solely require internal coordination between subcontractors.
2. Prepare in a format and with content acceptable to Architect.
   a. Use AIA G716 - Request for Information .
   b. Use CSI/CSC Form 13.2A - Request for Information.
3. Prepare using an electronic version of the form appended to this section.
4. Prepare using software provided by previously established Electronic Document Submittal Service.
5. Combine RFI and its attachments into a single electronic file. PDF format is preferred.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
2. Unacceptable Uses for RFIs: **Do not** use RFIs to request the following::
   a. Approval of submittals (use procedures specified elsewhere in this section).
   b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
   c. Changes that entail change in Contract Time or Contract Sum (comply with provisions of the Conditions of the Contract).
   d. Different methods of performing Work than those indicated within Contract Documents (comply with provisions of the Conditions of the Contract).
3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.

4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response
    a. Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by Architect and or Engineers, due to processing of such RFIs.

E. Content: Include those identifiers necessary for tracking status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
2. Owner's, Architect's, and Contractor's names.
3. Discrete, consecutive RFI number, and descriptive subject/title.
4. Issue date.
5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
6. Annotations: Field dimensions and/or description of conditions which have engendered said request.
7. **Contractor's suggested resolution:** A written and/or a graphic solution, to scale, is required. If applicable, identify the likely impact of the suggested resolution on Contract Time or Sum.

F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and all other information necessary to substantiate reason for said request.

G. RFI Log: Prepare and maintain a tabular Log of RFIs, entire duration of Project.
1. Indicate current status of every RFI. Update log promptly and on a weekly basis.
2. Note dates of when each request is made, and when a response is received.
3. Highlight all items requiring priority or expedited response.
4. Highlight all items for which a timely response has not been received to date.
5. Remove any improper or frivolous RFIs.

H. Review Time: For each Request for Information, Contractor shall coordinate minimum (13) Thirteen business days, excluding all Federal Holidays, into Construction Schedule, for Architect, Engineer review, response and return of said Request for Information, to Contractor. For the purpose of establishing start of said response period, those RFI's received after 1:00 p.m. local time, shall be considered as having been received upon the next regular Business day.
1. **Response period may be shortened or lengthened, at Architect's descretion.**

I. Responses: Content of answered RFIs **will not** constitute, in any manner a directive or authorization to perform any additional Work, or delay Project. If in Contractor's belief it is likely to lead to a change to Contract Sum orTime, promptly issue notice to this effect to Owner's Represntative, Architect and immediately follow up with appropriate Change Order request, within (3) Three Calendar days of issue date of Request for Information response.
1. Response may include a request for additional information, in which case, original RFI will be deemed as having been answered, and an amended vshall be issued forthwith, by Contractor. Identify the amended RFI with an R suffix to original number.

3.11 SUBMITTAL SCHEDULE

A. Submit to Architect for review a schedule for submittals within a tabular format.
1. Submit at the same time as the preliminary schedule.
2. Coordinate with Contractor's construction schedule and schedule of values.
3. Format schedule, as required to allow tracking of status of submittals throughout duration of construction.

4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
5. Account for all time required for preparation, review, Manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
    a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time, as required to make corrections, revisions to initial submittals, and time for their review.

3.12 SUBMITTALS FOR REVIEW

A. When following are specified within individual Sections, submit each for review:
1. Product data.
2. Design data.
3. Shop drawings.
4. Samples for selection.
5. Samples for verification.
6. Additional data required, this particular Project.

B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

C. Product Samples will be reviewed for General Construction, Color, Pattern and Finish.

D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

3.13 SUBMITTALS FOR INFORMATION

A. When the following are specified in individual sections, submit them for information:
1. Design data.
2. Sustainability design Submittals and Reports.
3. Certificates.
4. Test reports.
5. Inspection reports.
6. Manufacturer's instructions.
7. Manufacturer's Field Reports.
8. Field engineering Daily Reports.
9. All other types indicated.

B. Submit for Architect's knowledge as Contract Administrator.

3.14 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:
1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

D. Final Property Survey.

E. Submit for Owner's benefit, during and after Project Substantial Completion.

3.15 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Documents for Review:
   1. Small Size Sheets, Not Larger Than 8-1/2 by 11 inches: Submit one copy; the Contractor shall make Contractor's own copies from original returned by the Architect after making a file copy.
   2. Small Size Sheets, Not Larger Than 8-1/2 by 11 inches: Submit the number of copies that Contractor requires, plus two copies that will be retained by Architect.

C. Documents for Information: Submit (3) three copies.

D. Extra Copies at Project Closeout: See Section 01 78 00 - Closout Submittals.

E. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will **not be** returned to Contractor.

3.16 SUBMITTAL PROCEDURES

A. General Requirements:
   1. Use a separate transmittal for each item.
   2. Use a single transmittal for related items.
   3. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
   4. Transmit using approved form.
      a. Use Form AIA G810.
      b. Use Form CSI/CSC Form 12.1A.
      c. Use Contractor's form, subject to prior approval by Architect.
      d. Use form generated by Electronic Document Submittal Service software.
   5. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
   6. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
   7. Apply Contractor's stamp, signed or initialed certifying that review, approval, 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.
      a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
   8. Deliver each submittal on date noted in submittal schedule.
      a. Deliver submittals to Architect at business address.
      b. Deliver submittals to Construction Manager at business address.
      c. Deliver submittals to Architect at business address.
      d. Send submittals via electronic format, email to Architect.
      e. Upload submittals in electronic form to Electronic Document Submittal Service website.
   9. Schedule submittals to expedite the Project, and coordinate submission of related items.
      a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
      b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
      c. For sequential reviews involving approval from those Authorities having Jurisdiction, in addition to Architect's approval, allow an additional (30) Thirty Business days..
   10. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed Work.

11. Provide space for Contractor and Architect review stamps.
12. When revised for resubmission, identify all changes made since previous submission.
13. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
14. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
15. Submittals not requested will not be recognized or processed.
16. Submittals not requested will be recognized, and will be returned "Not Reviewed",
17. For each Submittal: Contractor shall coordinate within Construction Schedule, minimum (13) Thirteen business days, excluding all Federal Holidays, for Architect, Engineer review process, response and return of said Submittal. For the purpose of establishing a Start time for response period, those Submittals received after 1:00 p.m. local time, shall be considered as having been recieved upon the next business day. **Response Time may be shortened or lengthened, subject to Architect's descretion.**

B. Product Data Procedures:
1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Submit concurrently with related shop drawing submittal.
4. **Do not** submit (Material) Safety Data Sheets for materials or products.
5. Submit sustainable design reporting submittals under separate cover.

C. Shop Drawing Procedures:
1. Generic, non project specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:
1. Transmit all related items together, as (1) one single package.
2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
3. Include with transmittal high resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

3.17 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, and take appropriate action.

B. Submittals for Information.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.

D. Architect's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
a. "Reviewed", or language with same legal meaning.
1) Submittal has been reviewed and found to be in general conformance with the design intent and specifications. Resubmittal is not required.
2) Note that the design team does not “approve” submittals.
3) The use of this term by construction management software, orally, or in corrections or comments made on submittals during this review do not relieve Contractor, subcontractor, or supplier from compliance with requirements of the drawings and specifications.
b. "Reviewed as Noted", or language with same legal meaning.
1) Submittal has been reviewed for general conformance with the design intent and specifications and found to require minor corrections. The required corrections are indicated on the returned submittal. Make the noted corrections. Resubmittal is not required.

2) Please Note, Design Team does not approve submittals.
3) The use of this term by construction management software, orally, or in corrections or comments made on submittals during this review do not relieve Contractor from compliance with requirements of the drawings and specifications.

2. Not Authorizing fabrication, delivery and installation:
   a. "Revise and Resubmit".
      1) Resubmit revised item, with review notations acknowledged and incorporated.
      2) Submittal is not found to follow the design intent, details, or specifications. Make the revisions indicated and resubmit to Architect for further review.
      3) Non responsive resubmittals may be rejected.
   b. "Rejected".
      1) This indicates that the submittal is unacceptable, either because the submittal document does not comply with requirements, or the products or details of the submittal are unacceptable. A new submittal is required.
      2) Submit only those items fully complying with requirements of Contract Documents.

E. Architect's and consultants' actions on items submitted for information:
   1. Items for which no action was taken:
      a. "Received" - to notify the Contractor that the submittal has been **received for record only.**

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Construction Progress Schedule, Bar Type Chart.

1.02 RELATED SECTIONS

A. Section 01 10 00 - Summary

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. AGC (CPSM) - Construction Planning and Scheduling Manual; 2004.

B. M-H (CPM) - CPM in Construction Management - Project Management with CPM; 2016, with Addendum (2021).

1.04 SUBMITTALS

A. Within (5) Five business days of Agreement Issue Date, submit thoroughly detailed Premilinary Construction Progress Schedule.

B. If Premiminary Construction Progress Schedule requires revisions, submit Revised Preliminary Construction Progress Schedule within (3) Three business days.

C. Within (10) Ten business days Revised Preliminary Construction Progress Schedule Issue Date, submit thoroughly detailed, fully coordinated Initial Construction Progress Schedule, for review.

1. Include written Certification that all Major SubContractors previously reviewed and accepted said Initial Construction Progress Schedule.

D. Submit Updated Construction Progress Schedule with each Application for Payment Package, including Issue Date matching Application for Payment Package Issue Date.

E. Submit each Updated Construction Progress Schedule within PDF format only .

F. Submit (3) Three opaque reproductions, each Application for Payment Package.

G. Submit each Application for Paymetn Package under Transmittal Letter form as delineiated eithin Section 01 30 00 - Administrative Requirements.

1.05 QUALITY ASSURANCE

A. Construction Scheduler: Contractor's Personnell, Specialist, Consultant specializing in CPM type scheduling with minimum (10) Ten Years documented experience, scheduling Construction Work of type, complexity comparable to this particular Project, and having use of computer facilities capable of delivering thoroughly detailed graphic printout of an Updated Construction Progress Schedule within (48) Forty Eight Hours of Owner,Architect request.

B. Contractor's Administrative Personnel: Shall have minimum (10) Ten Years documented experience in using and monitoring CPM Type Construction Progress Schedules, comparable Projects.

1.06 SCHEDULE FORMAT

A. Listings: In chronological order via Start Date, each activity. Provide thoroughly detailed identification, each activity within each Specification Section Number.

B. Diagram Sheet Size: Minimum 11" x 17".

C. Scale and Spacing: As required to allow for notation, revisions.

PART 2 PRODUCTS; "NOT APPLICABLE, THIS PARTTICULAR PROJECT"...

PART 3 EXECUTION

3.01 CONSTRUCTION PROGRESS SCHEDULES

A. Prepare each Construction Progress Schedule within Horizontal Bar Type Chart.

3.02 CONTENT

A. Indicate complete sequence of construction via each activity, including dates for beginning, duration and completion of each

B. Identify each Work item via Specification Section number.

C. Identify all Work of separate stages, including any other logically grouped activities.

D. Provide Sub Schedules, each stage Work delineated within Section 01 10 00 - Summary.

E. Provide Sub Sschedules as required to define critical portions, entire schedule.

F. Include all conferences, meetings within Schedule.

G. Indicate accumulated percentage completion, each item and total percentage, Work completed, as of first day, each month.

H. Indicate delivery date, each Owner furnished Product.

I. Provide thoroughly detaied, accurate legend, all symbols, abbreviations used.

3.03 BAR CHARTS

A. Include separate bar, each major portion of Work, operation.

B. Identify first Work day, each week.

3.04 NETWORK ANALYSIS

A. Prepare network analysis diagrams, supporting mathematical analyses using the Critical Path Method.

B. Illustrate order, interdependence, all activitie, sequences of Work; how start of given activity depends upon completion of preceding activities and how completion of given activity may restrain start of subsequent activities.

C. Mathematical Analysis: Tabulate each activity, detailed network diagrams, using calendar dates and identify each activity:
   1. Preceding, following event numbers.
   2. Activity description.
   3. Estimated duration, activity, maximum (10) Ten business day intervals.
   4. Earliest Start Date.
   5. Earliest Finish Date.
   6. Actual Start Date.
   7. Actual Finish Date.
   8. Latest Start Date.
   9. Latest fFnish Date.
   10. Total, free float; float time shall accrue only to Owner's benefit.
   11. Monetary value, each activity, keyed to Schedule of Values.
   12. Percentage each activity completed.
   13. Responsibility.

D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates and recomputation, all dates and float.

E. Required Reports: List activities within sorts or groups:
   1. By preceding Work item or event number from lowest to highest.
   2. By amount of float, then in order of early start.
   3. By responsibility in order of earliest possible Start Date.
   4. In order of latest allowable Start Dates.
   5. In order of latest allowable Finish Dates.
   6. Contractor's periodic payment request sorted Schedule of Values listings.
   7. Listing of basic input data that generates said Feport.
   8. Listing all activities uponcritical path.

3.05 REVIEW, EVALUATION OF CONSTUCTION PROGRESS SCHEDULE

A. Conduct joint review, evaluation of Updated Construction Progress Schedule with Owner, Architect, each submittal.

B. Evaluate current Project status, as required to identify any Work behind schedule.

C. Following joint review, revise Updated Construction Progress Schedule as required and resubmit within (3) Three business days.

3.06 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.

B. Indicate progress, each Work activity to date of revision, with projected completion date, each Work activity.

C. Annotate all diagrams, as required to graphically depict current status of Work.

D. Identify any activities modified since previous submittal, major changes within Work and any other changes.

E. Indicate any changes required to maintain previously established Project Substantial Completion Date.

F. Submit those Reports required to support any recommended changes.

G. Provide thoroughly detailed narrative report, as required to define problem areas, anticipated delays and any impact on schedule. Report all corrective actions taken and thier effect.

3.07 DISTRIBUTION OF SCHEDULE

A. **Distribute copies of Updated Construction Progress Schedules to Owner, Architect, all SubContractors, Suppliers, Vendors, Existing Project Site File and any other concerned parties.**

B. Instruct all SubContractors to promptly report, in writing, any problems anticipated by those projections indicated within schedules.

END OF SECTION

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SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Quality Requirements.

1.02 RELATED, REQUIREMENTS

A. Document 00 31 00 - Available Project Information.

B. Document 00 72 00 - General Conditions.

C. Section 01 30 00 - Administrative Requirements.

D. Section 01 60 00 - Product Requirements.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).

B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2026.

C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2025.

D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2023.

E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2025b.

F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2026.

G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.

H. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2021.

1.04 DEFINITIONS

A. Contractor's Quality Control Plan: Contractor's Management Plan particular to this Project, for executing Contract for Construction.

B. Contractor's Professional Design Services: Design of some aspect or portion of the project by party other than the design professional of record. Provide these services as part of the Contract for Construction.

1. Design Services Types Required:
    a. Construction Related: Services Contractor needs to provide in order to carry out the Contractor’s sole responsibilities for construction means, methods, techniques, sequences, and procedures.
    b. Design Related: Design services explicitly required to be performed by another design professional due to highly technical and/or specialized nature of a portion of the project. Services primarily involve engineering analysis, calculations, and design, and are not intended to alter the aesthetic aspects of the design.

C. Design Data: Design related, signed and sealed drawings, calculations, specifications, certifications, shop drawings and other submittals provided by Contractor, and prepared directly by, or under direct supervision of, appropriately licensed design professional.

1.05 CONTRACTOR'S, CONSTRUCTION PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of Project's Conditions for Construction Contract.

B. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations.

C. Provide such engineering design services as may be necessary to plan and safely conduct certain construction operations, pertaining to, but not limited to the following:
   1. Temporary sheeting, shoring, or supports.
   2. Temporary scaffolding.
   3. Temporary bracing.
   4. Temporary falsework for support of spanning or arched structures.
   5. Temporary underpinning of Foundations.
   6. Temporary stairs, as required for construction access only.
   7. Temporary hoist(s) and rigging.
   8. Investigation of soil conditions to support construction equipment.

1.06 CONTRACTOR'S, DESIGN PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Base design on performance and/or design criteria indicated in individual specification sections.
   1. Submit a Request for Information to Architect, if criteria indicated are not sufficient to perform required design services.

1.07 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Designer's Qualification Statement:
   1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
      a. Entire Name, Title.
      b. Thoroughly detailed Professional Licensure data, including expiration Date.
      c. Thoroughly detailed statement addressing extent, depth of experience specifically relevant to design of those items assigned to Contractor, particular to this Project.

C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
   1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
   2. Include required detailed Product Data and Shop Drawings, particular to this Project.
   3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
   4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.

D. Test Reports: After each test/inspection, promptly submit PDF copies of report to Owner and Architect.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Compliance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.

2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

E. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

F. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

G. Manufacturer's Field Reports: Submit Reports for Architect's review.
   1. Submit report in duplicate within 30 days of observation to Architect for information.
   2. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

H. Erection Drawings: Submit drawings for Architect's review.
   1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.
   2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.08 QUALITY, ASSURANCE

A. Testing Agency Qualifications:
   1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
   3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

C. Contractor's Quality Control (CQC) Plan:
   1. **Prior to start of any Work, submit a comprehensive, thoroughly detailed plan describing how Contract deliverables will be produced. Tailor said plan to those requirements of this particular Project, while including following;**
      a. Management Structure: Identify personnel responsible for quality. Include a chart showing lines of authority.
         1) Include qualifications (in resume form), duties, responsibilities of each person assigned to CQC function.
      b. Management Approach: Define, describe, and include in the plan specific methodologies used in executing the work.
         1) Management and control of documents and records relating to quality.
         2) Communications.
         3) Coordination procedures.
         4) Resource management.
         5) Process control.
         6) Inspection and testing procedures and scheduling.

7) Control of noncomplying work.
8) Tracking deficiencies from identification, through acceptable corrective action, and verification.
9) Control of testing and measuring equipment.
10) Project materials certification.
11) Managerial continuity and flexibility.

c. Owner will not make a separate payment for providing and maintaining a Quality Control Plan. Include associated costs in Bid price.

d. Acceptance of the plan is required prior to start of construction activities not including mobilization work. Owner's acceptance of the plan will be conditional and predicated on continuing satisfactory adherence to the plan. Owner reserves the right to require Contractor to make changes to the plan and operations, including removal of personnel, as necessary, to obtain specified quality of work results.

D. Quality Control Personnel Qualifications. Engage a person with requisite training and experience, as required to implement and manage quality assurance (QA) and quality control (QC) for the project.

1.09 REFERENCES,STANDARDS

A. For products and workmanship specified by reference to a document or documents, not included within Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site 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 before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

G. **Wherever Project Manual identifies Reference Standards, most Current Edition of said Standards shall apply, this particular Project**.

1.10 TESTING, INSPECTIONS AGENCIES AND SERVICES

A. Contractor shall employ services of an Independent Testing Agency to perform certain specified testing; payment for cost of services will be derived from allowance specified in Section 01 21 00; see Section 01 21 00 and applicable sections for description of services included in allowance.

B. Owner shall pay for services of an Independent Testing Agency to perform said Inspections and Testing. Reference Section 01 21 00- Allowances for additional Content.

C. As indicated in individual specification sections, Owner or Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

D. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS: "NOT APPLICABLE"...

PART 3 EXECUTION

3.01 CONTROL, INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with Manufacturers' instructions, including each step in sequence.

C. Should Manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK UPS

A. Before installing any portions of Work where mock ups are required, for each form of construction and finish required to comply with following requirements, using materials indicated for completed Work. The purpose of mock up is to demonstrate proposed range of aesthetic effects and workmanship.

B. All accepted mock ups shall establish standard of quality, Architect shall implement to judge said Work. **No mock up shall remain as portion of permanent Work, this particular Project.**

C. Notify Architect minimum (20) twenty business days in advance of any dates, times when mock ups will be ready review by Architect, Owner's Representative.

D. Provide well experienced supervisory personnel who shall oversee mock up construction. **Provide only those workers that will be employed during construction, this particular Project.**

E. Tests shall be performed under provisions identified within this Section and as identified in the respective product specification Sections.

F. Assemble and erect all specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

G. Obtain Architect's approval of all mock ups, prior to begining Work, fabrication, or construction.
   1. Architect shall issue written comments within (10) Ten business days of initial review and each subsequent follow up review of said mock ups.
   2. Make all corrections, as necessary until Architect's approval has been received.

H. Architect shall rely on previously approved mock ups, as quality standard for all remaining related Work.

I. Wherever mock up has been previously accepted by Architect, protect said mock up throrughout Construciton period and remove init's enttirety from existing Project SIte, only when directed to do so, in writinh, by Architect.

J. Wherever possible, salvage and recycle demolished mock up materials.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. **Do not permit tolerances to accumulate.**

B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust all Products to appropriate dimensions; position, prior to securing in place.

3.04 TESTING, INSPECTION

A. Reference each individual specification section for testing and inspection required.

B. Testing Agency Duties:

1. Test samples of mixes submitted by Contractor.
2. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
3. Perform specified sampling and testing of products in accordance with specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
6. Perform additional tests and inspections required by Architect.
7. Attend preconstruction meetings and progress meetings.
8. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the Work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, provide all necessary access to Work and Manufacturer's Production Facility.
3. Provide incidental labor and facilities:
   a. To provide access to Work to be tested/inspected.
   b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
   c. To facilitate tests/inspections.
   d. To provide storage and curing of test samples.
4. Notify Architect and laboratory minimum (48) forty eight hours prior to expected time for operations requiring any testing,inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Any re-testing required because of non-compliance within specified requirements, shall be performed by same agency.

F. Any re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.05 MANUFACTURERS, FIELD SERVICES

A. When specified within individual specification sections, require material or product suppliers or Manufacturers to provide qualified staff personnel, as required to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance equipment, as required and initiate instructions when necessary.

B. Submit qualifications of observer to Architect 30 days in advance of required observations.
1. Observer subject to approval of Architect.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT, ASSESSMENT

A. **Immediately replace all Work, not in full compliance with Contract Documents.**

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Facilities and Controls.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.

B. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

1.03 DEWATERING

A. Provide temporary means and methods for dewatering all temporary facilities and controls.

B. Maintain temporary facilities in operable condition.

1.04 TEMPORARY UTILITIES

A. Contractor shall provide, pay for all temporary utilities required, this particular Project.

B. Existing facilities **may not** be used.

C. New permanent facilities **may not** be used.

D. Use only trigger operated nozzles for water hoses, to avoid waste of water.

1.05 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for all telecommunications services to field office.

B. Provide equivalent equipment and connections for Owner's field office.

C. Provide equivalent equipment and connections for Architect's field office.

1.06 TEMPORARY, SANITARY FACILITIES

A. Provide and maintain all required temporary acilities, enclosures, effective immediately upon SIte Mobilization.

B. **Use of existing facilities is not permitted.**

C. **Use of new permanent facilities is not pemitted.**

D. Maintain daily in thoroughly clean, sanitary condition.

1.07 BARRIERS

A. Provide barriers, as required to prevent any unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or general public and to protect existing facilities and adjacent properties from any damage from construction, demolition operations

B. Provide all temporary barricades, covered walkways as required by governing authorities for public rights of way and for public access to existing building.

C. Provide protection of all plants designated to remain. Replace any damaged plants.

D. Protect all vehicular traffic, stored materials, Existing Project Site, and all existing structures from damage.

1.08 FENCING

A. Provide 8 foot high commercial grade chain link fencng, entire perimeter Existing Project Site, including gates as required with locks.

1.09 EXTERIOR ENCLOSURES

A. Provide all temporary insulated weather tight closure of exterior openings, as required to accommodate acceptable working conditions and protection of all Products, to allow for temporary heating and maintenance of required ambient temperatures identified within individual specification Sections, and to prevent entry of any unauthorized persons. Provide access doors with self closing hardware and locks.

1.10 INTERIOR ENCLOSURES

A. Provide all temporary partition as required to separate Work areas from any Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

B. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:
   1. Insulated.
   2. STC rating of 35 in accordance with ASTM E90.
   3. Maximum flame spread rating of 75 in accordance with ASTM E84.

C. Paint surfaces exposed to view from Owner-occupied areas.

1.11 SECURITY

A. Provide security and facilities, as required to protect all Work, existing facilities, and Owner's operations from any unauthorized entry, vandalism, damage or theft.

B. Coordinate with Owner's security program.

1.12 VEHICULAR ACCESS, PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

D. Provide means of removing mud from vehicle wheels before entering streets.

E. Previously designated Existing Project Site roads may be used for construction traffic.

F. Provide temporary parking areas to accommodate construction personnel. When Project Site space is not adequate, provide additional off Project Site parking.

G. A portion of existing parking areas may be used for construction parking.

H. Provide minimum (3) Three parking spaces for Owner Representative use, immediately adjacent Temporary Construction Trailer.

I. Provide minimum (2) Two parking spaces for Architect use, immediately adjacent Temporary Construction Trailer.

1.13 WASTE REMOVAL

A. Waste Removal and Disposal per Contrat Documents an any regulations enforced by those Local Authorities having Jurisdiction.

B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

C. Provide containers with secured lids. Remove trash from site periodically.

D. If materials to be recycled or reused on the project must be stored on site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

E. Open free fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.14 PROJECT SIGNS

1.15 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction as directed by Architect..

B. Erect on Project Site as directed by Architect.

C. Erect on Project Site as directed by Architect.

D. Provide project identification sign of design, construction, and location approved by Owner.

E. No other signs allowed without Owner permission, except those required by law.

1.16 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

C. Provide separate private office similarly equipped and furnished, for use of Owner.

D. Provide separate private office similarly equipped and furnished, for use of Architect and Owner.

E. Locate offices a minimum distance of (75) Seventy Five feet from any existing, new structure.

1.17 REMOVAL OF UTILITIES, FACILITIES, CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Remove underground installations to a minimum depth of (2) Two Feet. Finish grade as directed by Civil Engineer, Architect.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing facilities used during construction to original condition.

E. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - "NOT APPLICABLE"...

PART 3 EXECUTION - "NOT APPLICABLE"...

END OF SECTION

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SECTION 01 57 13
TEMPORARY EROSION AND SEDIMENT CONTROL

GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Performance bond.

E. Compensation to owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.

B. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.

C. Section 32 9219 - Seeding: Permanent turf for erosion control.

D. Section 32 9223 - Sodding: Permanent turf for erosion control.

E. Section 32 9300 - Plants: Permanent plantings for erosion control.

F. Section 03 3000 - Cast-in-Place Concrete: Concrete for temporary and permanent erosion control structures indicated on drawings.

1.03 REFERENCE STANDARDS

A. ASTM D 4355 - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus; 2007.

B. ASTM D 4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 1999a (Reapproved 2009).

C. ASTM D 4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2004 (Reapproved 2009).

D. ASTM D 4632 - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2008.

E. ASTM D 4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2004.

F. ASTM D 4873 - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2002 (Reapproved 2009).

G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; current edition.

H. FHWA FLP-94-005 - Best Management Practices for Erosion and Sediment Control; Federal Highway Administration; 1995.

I. USDA TR-55 - Urban Hydrology for Small Watersheds; USDA Natural Resources Conservation Service; 1986.

J. “Model Best Management Practices (BMP) for Land Disturbance – Sediment and Erosion Control”, St. Louis County (latest edition).

K. It is the Contractor's responsibility to obtain a copy of these standard Specifications and details, whether at the state, county, or local level.

1.04 PERFORMANCE REQUIREMENTS

A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II, under requirements for the 2003 Construction General Permit (CGP), whether the project is required by law to comply or not.

B. Comply with all requirements of "Model Best Management Practices (BMP) for Land Disturbance – Sediment and Erosion Control", St. Louis County (latest edition).

C. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

D. All erosion control shall be installed as soon as possible and before precipitation occurs. The erosion control measures shall be continuously maintained by the Contractor until final acceptance of the project. Upon acceptance of the project, temporary erosion controls shall be removed unless otherwise instructed by the architect.

E. The architect will notify the Contractor in writing of any noncompliance with the provisions of these specifications. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the architect may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damage by the Contractor unless it was later determined that the Contractor was in compliance. Absence of any such notification does not relieve the contractor of his responsibilities to comply with all these specifications.

F. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
   2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

G. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to the owner.

H. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to the owner.

I. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

J. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

K. Open Water: Prevent standing water that could become stagnant.

L. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Erosion and Sedimentation Control Plan: The contractor shall reference the approved Storm Water Pollution Prevention Plan (SWPPP) for erosion control means and methods.

C. Inspection Reports: Submit reports of each inspection to architect and engineer; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

D. Maintenance Instructions: Provide instructions covering inspection and maintenance for temporary measures that must remain after Substantial Completion.

PRODUCTS

2.01 MATERIALS

A. General: Surface drainage from cuts, fills, topsoil or other material stockpiles, within the construction limits, whether or not completed, and from borrow and waste disposal areas, shall, if turbidity producing materials are present, be held in sedimentation ponds or shall be graded to control erosion. Temporary erosion and sediment control measures including but not limited to berms, drains, or sedimentation basins, are required to meet these standards and shall be provided and maintained until permanent drainage and erosion control facilities are completed and operating. The area of bare soil exposed by construction operations at any one time should be held to a minimum.

B. Grading Operations:
   1. Grading operations shall be scheduled so excavated materials shall be immediately placed into compacted embankments.
   2. Where steep slopes or abrupt changes in grade are required, a division channel or berm shall be constructed at the top of the slope to cause the surface water to flow along the diversion to controlled slope drains. The contractor shall reference the approved Storm Water Pollution Prevention Plan (SWPPP) for erosion control means and methods.

C. Mulch: Use one of the following:
   1. Wood waste, chips, or bark.
   2. Erosion control matting or netting.
   3. Grass
   4. Mulch shall be applied to slopes in excess of one foot vertical to ten feet horizontal unless otherwise shown.

D. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.
   1. Earth areas outside of building, walks and paving that are not to be immediately planted with permanent grass or landscaping shall be seeded with a temporary seed that will produce a

fast growing cover resistant to erosion as required per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.

2. Temporary grassing and mulching shall conform to St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.

E. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; Silt fence shall be per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance.
   1. Silt fences shall be constructed at the toe of embankment or perimeter of all disturbed earth areas and shall be located to interrupt silt transport conveyed by overland surface drainage runoff from the disturbed areas.
   2. Sediment accumulated behind silt fences shall be removed, redistributed and compacted immediately prior to beginning temporary grassing.

F. Inlet Barriers:
   1. Block and gravel inlet protection, silt fence or inlet protection fabric drops where indicated, shall be installed around perimeter at each inlet where inlets are near to work performed as part of this project. Fiber and filter rolls may be used around inlets that are constructed within paved areas or at inlets in pavement, downstream of construction areas. Silt deposits shall be periodically removed during construction and immediately prior to final acceptance.

G. Dust Control:
   1. The Contractor shall maintain all excavations, embankments, stockpiles, haul roads, temporary and permanent access roads, plant sites, waste areas, borrow areas and all other work areas within or without the project boundaries free from dust and to minimize offsite transport of soil by wheels which would cause a hazard or nuisance or nuisance to others.
   2. Temporary or permanent graded access drives from adjacent paved public or private roads or rights-of-way shall be temporarily surfaced per St. Louis County's Model Best Management Practices (BMP) for Land Disturbance. Maintain throughout construction period. Sprinkle regularly to settle accumulated silt.
   3. Approved temporary methods of stabilization of all areas other than the construction entrance road shall consist of sprinkling, chemical treatment, light bituminous treatment, gravel surfacing or similar methods to control dust. Sprinkling to be approved and must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times. Contractor must have sufficient competent equipment on the job at all times if sprinkling is used.
   4. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs.

EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule all work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A. All erosion control shall be installed and continuously maintained by the Contractor until final acceptance of the project. Upon acceptance of the project, temporary erosion controls shall be removed unless otherwise instructed by the architect.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 24 feet, minimum (2-way); 14 feet, minimum (1-way).
   2. Length: 50 feet, minimum.

3. Provide at each construction entrance from public right-of-way.
4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences, fiber and filter rolls
   1. Provide linear sediment barriers:
      a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
      b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
      c. Along the toe of cut slopes and fill slopes.
      d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas
      e. Across the entrances to culverts that receive runoff from disturbed areas.

D. Storm Drain Inlet Sediment Traps: As detailed on drawings.

E. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

F. Soil Stockpiles: Protect using one of the following measures:
   1. Cover with polyethylene film, secured by placing soil on outer edges.
   2. Cover with mulch at least 4 inches thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches of straw or hay.

G. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
   1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.

H. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A. Refer to “Model Best Management Practices (BMP) for Land Disturbance – Sediment and Erosion Control”, St. Louis County (latest edition) for installation requirements.

3.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours of any storm event at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:
   1. Promptly replace fabric that deteriorates unless need for fence has passed.
   2. Remove silt deposits that exceed one-third of the height of the fence.
   3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Clean out temporary sediment control structures weekly and relocate soil on site or remove from site as directed by architect.

3.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by architect.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

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SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Product Requirements.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary.

B. Section 01 40 00 - Quality Requirements: Product quality monitoring.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 16 CFR 260.13 - Guides for the Use of Environmental Marketing Claims; Federal Trade Commission; Recycled Content; Current Edition.

B. ANSI A138.1 - Green Squared American National Standard Specifications for Sustainable Ceramic Tiles, Glass Tiles, and Tile Installation Materials; 2011 (Reaffirmed 2021).

C. ANSI/NSC 373 - Sustainable Production of Natural Dimension Stone; 2019.

D. ASTM D6866 - Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis; 2024.

E. BIFMA e3 - Furniture Sustainability Standard; 2024.

F. C2C (DIR) - C2C Certified Products Registry; Cradle to Cradle Products Innovation Institute; Current Edition.

G. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers Version 1.2; 2017.

H. CAN/CSA Z809 - Sustainable Forest Management; 2016 (Reaffirmed 2021).

I. EN 15804 - Sustainability of Construction Works - Environmental Product Declarations - Core Rules for the Product Category of Construction Products; 2022 (Corrigendum 2021).

J. GreenScreen (LIST) - GreenScreen for Safer Chemicals List Translator; Clean Production Action; Current Edition.

K. GreenScreen (METH) - GreenScreen for Safer Chemicals Method v1.2; Clean Production Action; Current Edition.

L. HPDC (HPD-OLT) - Create an HPD On-Line Tool; Health Product Declaration Collaborative; Current Edition.

M. ISO 14025 - Environmental Labels and Declarations - Type III Environmental Declarations - Principles and Procedures; 2006.

N. ISO 14040 - Environmental Management - Life Cycle Assessment - Principles and Framework; 2006, with Amendment (2020).

O. ISO 14044 - Environmental Management - Life Cycle Assessment - Requirements and Guidelines; 2006, with Amendment (2020).

P. ISO 21930 - Sustainability in Buildings and Civil Engineering Works — Core Rules for Environmental Product Declarations of Construction Products and Services; 2017.

Q. NEMA MG 00001 - Motors and Generators; 2024.

R. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

S. NSF 332 - Sustainability Assessment for Resilient Floor Coverings; 2022.

T. NSF/ANSI 140 - Sustainability Assessment for Carpet; 2019.

U. NSF/ANSI 336 - Sustainability Assessment for Commercial Furnishings Fabric; 2018.

V. NSF/ANSI 342 - Sustainability Assessment for Wallcovering Products; 2019.

W. NSF/ANSI 347 - Sustainability Assessment for Single Ply Roofing Membranes; 2018.

X. UL 100 - Standard for Sustainability for Gypsum Boards and Panels; Current Edition, Including All Revisions.

Y. UL 102 - Sustainability Assessment for Swinging Door Leafs; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Proposed Products List: Submit list of all major products proposed for use, with name of manufacturer, trade name, and model number of each product.
   1. Submit said list within (5) Five Business days of date of Agreement.
   2. For those Products specified only by reference standards, list all applicable reference standards.

B. Product Data Submittals: Submit Manufacturer's thoroughly detaild Product Data, particular to this Project. Mark each copy to identify applicable products, models, options and other data.

C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, all utility connection requirements, and all locations of any utility outlets for service for functional equipment, appliances.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
   1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

E. Sustainable Design Submittals: Items necessary to document use of sustainable construction materials, products and practices.

PART 2 PRODUCTS

2.01 EXISTING PRODUCTS

A. **Do not** use any materials, equipment removed from existing premises.

B. Any unforeseen historic items encountered shall remain property of Owner; notify Owner immediately upon discovery; protect, remove, handle and store as directed by Owner.

2.02 NEW PRODUCTS

A. Provide only new Products.

B. Reference Section 01 40 00 - Quality Requirements, for additional Content.

2.03 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use only those Products fully meeting standards, descriptions.

B. Products Specified by Naming One or More Manufacturers: Use a Product of one of the Manufacturers named and meeting specifications.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any Manufacturer not named.

PART 3 EXECUTION

3.01 TRANSPORTATION, HANDLING

A. Package all Products for shipment in manner, as required to prevent damage.

B. If special precautions are required, attach instructions prominently and legibly upon outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle Products in full accordance with Manufacturer's instructions.

E. Transport materials only within covered trucks.

F. Promptly inspect all shipments, as required to ensure Products comply with all requirements, quantities are correct, and Products are undamaged.

G. Provide all equipment, personnel, as required to handle Products only by those methods that shall prevent soiling, disfigurement and damage.

H. Arrange for removal of all packing materials from Existing Project Site.

3.02 STORAGE, PROTECTION

A. Designate receiving/storage areas for incoming Products so they are delivered according to installation schedule and placed convenient to Work areas in order to minimize waste due to excessive materials handling and misapplication.

B. Store and protect all Products in full accordance with Manufacturers' written instructions.

C. Store with seals and labels intact and legible.

D. Store sensitive products in weathertight, climate controlled enclosures in an environment favorable to product.

E. For exterior storage of fabricated products, place on sloped supports above ground.

F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

G. Fully comply with all Manufacturer's warranty conditions.

H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

I. Prevent contact with material that may cause corrosion, discoloration, or staining.

J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

L. **Protect all Products, Materials from Damage.**

M. **Replace all Damaged Products, Materials, immediaely.**

END OF SECTION

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SUBSTITUTION REQUEST
(During the Bidding/Negotiating Phase)

PROJECT: _____

SUBSTITUTION REQUEST NUMBER: _____

FROM: _____

TO: _____

DATE: _____

A/E PROJECT NUMBER: _____

RE: _____

CONTRACT FOR: _____

SPECIFICATION TITLE: _____

DESCRIPTION: _____

SECTION: _____ **PAGE:** _____

ARTICLE/PARAGRAPH: _____

PROPOSED SUBSTITUTION: _____

MANUFACTURER: _____ **ADDRESS:** _____ **PHONE:** _____

TRADE NAME: _____ **MODEL NO.:** _____

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

The Undersigned certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

SUBMITTED BY: _____

SIGNED BY: _____

FIRM: _____

ADDRESS: _____

TELEPHONE: _____

A/E's REVIEW AND RECOMMENDATION:

☐ Approve Substitution—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

☐ Approve Substitution as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

☐ Reject Substitution—Use specified materials.

☐ Substitution Request received too late—Use specified materials.

SIGNED BY: **DATE:**

SUPPORTING DATA ATTACHED: ☐ **Drawings** ☐ **Product Data** ☐ **Samples** ☐ **Tests** ☐ **Reports** ☐ _____

CSI Form 1.5C (August 2020 version)

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SUBSTITUTION REQUEST
(After the Bidding/Negotiating Phase)

PROJECT: _____

SUBSTITUTION REQUEST NUMBER: _____

FROM: _____

TO: _____

DATE: _____

A/E PROJECT NUMBER: _____

RE: _____

CONTRACT FOR: _____

SPECIFICATION TITLE: _____

DESCRIPTION: _____

SECTION: _____ PAGE: _____

ARTICLE/PARAGRAPH: _____

PROPOSED SUBSTITUTION: _____

MANUFACTURER: _____ ADDRESS: _____ PHONE: _____

TRADE NAME: _____ MODEL NO.: _____

INTALLER: _____ ADDRESS: _____ PHONE: _____

HISTORY: ☐ New Product ☐ 1-4 years old ☐ 5-10 years old ☐ More than 10 years old

DIFFERENCES BETWEEN PROPOSED SUBSTITUTION AND SPECIFIED PRODUCT: _____

☐ Point-by-point comparative data attached — REQUIRED BY A/E

REASON FOR NOT PROVIDING SPECIFIED ITEM: _____

SIMILAR INSTALLATION:

PROJECT: _____ ARCHITECT: _____

ADDRESS: _____ OWNER: _____

DATE INSTALLED: _____

PROPOSED SUBSTITUTION AFFECTS OTHER PARTS OF WORK: ☐ No ☐ Yes; explain _____

SAVINGS TO OWNER FOR ACCEPTING SUBSTITUTION:

PROPOSED SUBSTITUTION CHANGES CONTRACT TIME: ☐ No ☐ Yes [Add] [Deduct] _____ days.

SUPPORTING DATA ATTACHED: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

CONTINUE ON NEXT PAGE

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SUBSTITUTION REQUEST
(After the Bidding/Negotiating Phase—Continued)

The Undersigned certifies:
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

SUBMITTED BY: _____

SIGNED BY: _____

FIRM: _____

ADDRESS: _____

TELEPHONE: _____

☐ **Attachments**

A/E's REVIEW AND RECOMMENDATION:

☐ Approve Substitution—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

☐ Approve Substitution as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.

☐ Reject Substitution—Use specified materials.

☐ Substitution Request received too late—Use specified materials.

SIGNED BY: **DATE:**

OWNER'S REVIEW AND ACTION:

☐ Substitution approved—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures. Prepare Change Order

☐ Substitution approved as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures. Prepare Change Order.

☐ Substitution rejected—Use specified materials.

SIGNED BY: **DATE:**

ADDITIONAL COMMENTS: ☐ **Contractor** ☐ **Subcontractor** ☐ **Supplier** ☐ **Manufacturer** ☐ **A/E**

CSI Form 13.1A (April 2022 version)

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SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation and general installation procedures.

B. Requirements for alterations work, including selective demolition.

C. Pre installation meetings.

D. Cutting and patching.

E. Surveying for laying out the Work.

F. Cleaning and protection.

G. Starting of systems and equipment.

H. Demonstration and instruction, Owner p ersonnel.

I. Closeout procedures.

J. General requirements, maintenance service.

1.02 RELATED REQUIREMENTS

A. Section 01 10 00 - Summary.

B. Section 01 30 00 - Administrative Requirements.

C. Section 01 40 00 - Quality Requirements.

D. Section 01 78 00 - Closeout Submittals.

E. Demonstration and Training.

F. Section 02 41 00 - Demolition.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 SUBMITTALS

A. Reference Setion 01 30 00Administrative Requirements for additional Content.

B. Survey work: Provide name, address, cell phone number and email address of contact person for Surveyor**,** before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.
   3. Submit surveys and survey logs for the project record.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences. Include design drawings and calculations for bracing and shoring.
   2. Identify demolition firm and submit qualifications.
   3. Include a summary of safety procedures.

D. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.

E. Project Record Documents: Accurately record all actual locations of capped, active utilities.

1.05 PROJECT CONDITIONS

A. Use of any explosives within this particular Project Site, is expressly prohibited.

B. Finish grade entire ExistingProject Site, as required to properly drain. Maintain all excavations free of water. Provide, operate, and maintain pumping equipment, as required.

C. Protect entire Project Site from any puddling or running water. Provide and install water barriers, as required to protect entire Project Site from erosion.

D. Perform dewatering activities, as required, for duration of entire project.

E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

F. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust proof enclosures to prevent entry of dust generated outdoors.
   2. Provide dust proof barriers between construction areas and areas continuing to be occupied by Owner.

G. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
   4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

H. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.
   1. At All Times: Excessively noisy tools and operations will not be tolerated inside the building at any time of day; excessively noisy includes jackhammers.
   2. Outdoors: Limit conduct of especially noisy exterior work to hours of 7: 00 a.m. to 4:00p.m., local time, unless stipulated otherwise by those Local Auhorities having Jurisdiction.
   3. Indoors: Limit conduct of particularly noisy indoors Work to the hours of 6:00 p.m. to 6:00a.m., local time.

I. Pest and Rodent Control: Provide methods, means, and facilities, as required to prevent pests, insects from entering Work areas or damagin same.
   1. Pest Control Service: Weekly treatments.

J. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

K. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

A. Reference Section 01 10 00 - Summary for additional Content.

B. Coordinate scheduling, submittals and Work of various Sections, this particular Project Manual, as required to ensure efficient, orderly sequence of installation, all interdependent construction elements, including provisions for accomodating all items installed at later date.

C. Immediately notify all affected utility companies and fully comply with all their requirements.

D. Verify that utility requirements and characteristics of new 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.

E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. Within all finished areas, fully conceal all pipes, ducts and wiring within the construction. Coordinate locations of fixtures, outlets with finish elements.

G. Coordinate completion, final thorough clean up, all Work, separate Sections.

H. Following Owner occupancy of premises, coordinate access to Existing Poject Site for correction of any defective Work and or that Work not in full accordance with Contract Documents, as required to eliminate disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution, as deleniated within Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Confirm all existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Thoroughly clean all substrate surfaces, prior to applying next material or substance.

B. Seal all cracks or openings within any substrate surfaces, prior to applying next material or substance.

C. Apply Manufacturer recommended substrate primer, sealer, or conditioner, prior to applying any new material or substance within contact or bond.

3.03 PRE INSTALLATION MEETINGS

A. When required within individual Specification Sections, convene a preinstallation meeting at Existing Project Site, prior to commencing any Work.

B. Require attendance of all parties affected by said Work.

C. Prepare agenda and preside at meeting:
   1. Thoroughly review all conditions of examination, preparation and installation procedures.
   2. Thoroughly review coordination with all related Work.

D. Record minutes and distribute copies within (2) Two Business dys, following saind Meeting, to all participants, including copies to Architect, Owner, and those affected by any decisions made during Meeting.

3.04 LAYING OUT, WORK

A. Contractor shall verify all locations of Survey Control Points, prior to starting any Work.

B. Contractor shall locate and protect entire Survey Control and all Reference Points.

C. Contractor shall control all datum for entire survey.

D. **Contractor shall protect all Survey Control Points, prior to starting any Work. Contractor shall preserve all permanent reference points during construction.**

E. **Contractor shall promptly report to Architect, loss or destruction of any reference points.**

F. **Contractor shall replace all dislocated Survey Control Points. Make no changes, without prior written notice to Architect.**

G. Utilize recognized engineering survey practices.

H. Contractor shall establish a minimum (3) three permanent bench marks within this particular Project Site, referenced to established control points. Record locations, with horizontal and vertical data upon project record documents.

I. Contractot shall establish all elevations, lines and levels. Contractot shall locate and lay out by instrumentation and or similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations and ground floor elevations.
   4. Controlling lines and levels required for mechanical and electrical trades.

J. Periodically verify layouts by same means.

K. Maintain complete, accurate log of control and survey Work as it progresses.

L. Upon completion of foundation walls, any major site improvements, Cotractor shall prepare a certified survey illustrating dimensions, locations, angles, and elevations of all Construcon Scope of Work.

3.05 GENERAL INSTALLATION, REQUIREMENTS

A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.

B. Install all products as specified in individual Sections, within full accordance with Manufacturer's instructions, recommendations, as required to avoid any waste due to necessity for replacem

C. Make all vertical elements plumb and horizontal elements level.

D. Install all equipment, fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines.

E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

F. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.

1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 50 00 in locations indicated on drawings.
2. Provide sound retardant partitions of construction indicated on drawings in locations indicated on drawings.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

D. Remove existing work as indicated and as required to accomplish new work.
1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
2. Remove items indicated on drawings.
3. Relocate items indicated on drawings.
4. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
5. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate and extend existing systems, as required to accommodate new construction.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    b. Reference Section 01 10 00 - Summary for additional Content.
    c. Provide temporary connections as required to maintain existing systems in service.
4. Confirm all abandoned services serve only abandoned facilities.
5. Remove all abandoned pipe, ducts, conduits and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

F. **Protect all existing Work intended to remain.**
1. Prevent any movement of structure, provide shoring and bracing, as rquired by existing conditions.
2. Perform all necessary cutting, as required to accomplish all removals neatly and as delineated within Contract Documents.
3. Repair any adjacent construction and finishes, damaged during removal work.

G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

3. Where a change of plane of 1/4 inch or more occurs in existing work, submit recommendation for providing a smooth transition for Architect review and request instructions.
4. Where a change of plane of 1/8 inch or more occurs in existing work.
5. Trim existing wood doors as necessary to clear new floor finish. Refinish trim as required.

H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

I. Refinish existing surfaces as directed via Contract Documents;
1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

J. **Thoroughly clean all existing systems and equipment.**

K. Remove all demolition debris, any abandoned items from alterations areas and dispose of off site; **do not burn or bury.**

L. Do not begin new construction in alterations areas before demolition is complete.

M. Fully comply with all other applicable requirements.

3.07 CUTTING, PATCHING

A. Whenever possible, execute Work via those methods that avoid need for cutting or patching.

B. Reference Alterations article, above, for additional Content.

C. Perform all cutting and patching, as required to:
1. Complete said Work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-complying work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 84 00, to full thickness of the penetrated element.

J. Patching:
1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.

3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION, INSTALLED WORK

A. **Protect all Work, these Contract Documents, from Damage.**

B. **Replace all Damaged Work, these Contract Documents, immediately.**

C. Provide special protection where delineated within individual Specification Sections.

D. Provide temporary, removable protection, all installed products. Control activity in immediate Work area, as required to prevent amuamage.

E. Provide protective coverings at walls, projections, jambs, sills and soffits of openings.

F. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

G. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.

H. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

I. Prohibit traffic from landscaped areas.

J. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM START UP

A. Coordinate within all requirements of Engineer of Record.

B. Coordinate schedule for start-up of various equipment and systems.

C. Notify Architect and Owner seven days prior to start-up of each item.

D. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

E. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

F. Verify that wiring and support components for equipment are complete and tested.

G. Execute start up under direct supervision of applicable Contractor personnel and Manufacturer's Representative, in full accordance with Manufacturers' instructions.

H. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

I. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 DEMONSTRATION, INSTRUCTION

A. Reference Section 01 79 00 - Demonstration and Training for additional Content.

B. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.

D. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.

F. Perform instruction in a classroom environment.

G. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

H. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

I. The amount of time required for instruction on each item of equipment and system is that specified in individual sections.

3.12 ADJUSTING

A. Adjust, repair all operating Products and Equipment, as required to ensure smooth and unhindered operation.

B. Testing, Adjusting, and Balancing of entire (HVAC) systems.

3.13 FINAL CLEANING

A. Execute final thoroughly comprehensive cleaning prior to previously established Project Substantial Completion Date.

B. Use only those cleaning materials, that are nonhazardous.

C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

F. Clean filters of operating equipment.

G. Clean all debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains and drainage systems.

H. Thorougly clean Existing Project Site; sweep paved areas, rake clean landscaped surfaces.

I. Remove all waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

J. Thoroughly clean all Owner occupied areas of Work.

3.14 CLOSEOUT PROCEDURES

A. Make all submittals, required by governingother authorities.
   1. Provide copies to Architect.
   2. Provide copies to Owner.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect immediately, whenever ork is considered ready for Architect's Substantial Completion Punhlist Inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Owner shall occupy entire building as outlined within Section 01 10 00- Summary.

F. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

G. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

H. Accompany Project Coordinator on Contractor's preliminary final inspection.

I. Notify Architect immediately whenever Work is considered finally complete and ready for Architect's Substantial Completion final Punchlist Inspection.

J. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.15 MAINTENANCE

A. Provide all Service and Maintenance of components, indicated within Contract Documents.

B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.

C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

END OF SECTION

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SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires this Project generate least amount of trash, waste possible.

B. Employ only those processes ensure generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination and or any other factors.

C. Minimize trash, waste disposal within landfills; reuse, salvage, or recycle as much trwaste as economically feasible.

D. Owner Owner may elect to pay for additional recycling, salvage and or reuse based on Landfill Alternatives Proposal specified below.

E. Required Recycling, Salvage and Reuse: **Following items, materials may not be disposed of withn landfills or via incineration:**

1. Aluminum or plastic beverage containers.
2. Corrugated cardboard.
3. Wood pallets.
4. Clean wood.
5. Land clearing debris, including brush, branches, logs or stumps.
6. Concrete.
7. Bricks.
8. Concrete masonry units.
9. Precast concrete panels.
10. Asphalt paving.
11. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping, reinforcing bars, door frames any other items made of steel, iron, galvanized steel, stainless steel, aluminum, copper, zinc, lead, brass or bronze.
12. Glass.
13. Gypsum drywall and plaster.
14. Plastic buckets.
15. Carpet, carpet cushion, carpet tile or carpet remnants, both new and existing.
16. Asphalt roofing shingles.
17. Paint.
18. Plastic sheeting.
19. Rigid foam insulation.
20. Vinyl siding.
21. Windows, doors or door hardware.
22. Plumbing fixtures.
23. Mechanical or Electrical equipment.
24. Fluorescent lamps, bulbs.
25. Acoustical ceiling tile or panels.

F. Contractor Reporting Responsibilities: Submit periodic Waste Disposal Reports; report landfill disposal, recycling, salvage and reuse.

G. Develop and follow Waste Management Plan designed to implement these requirements.

H. Following sources may be useful in developing Waste Management Plan, this Particular Project:

1. State Recycling Department,.
2. Recycling Haulers, Markets: Haulers, Markets for recyclable materials.

I. **Methods of trash, waste disposal that are not acceptable:**

1. Burning.
2. Incineration.

J. Regulatory Requirements: Contractor shall be responsible for knowing, fully complying with all regulatory requirements, including but not limited to Federal, State, Local requirements, pertaining to legal disposal of all construction, demolition waste materials.

1.02 RELATED REQUIREMENTS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Reference Section 01 50 00 - Temporary Facilities and Controls for additional Content.

C. Reference Section 01 60 00 - Product Requirements for additional Content.

D. Reference Section 01 70 00 - Execution and Closeout Requirements for additional Content.

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: All solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Non hazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans, animals nor poisonous after any period of exposure.

F. Recyclable: Ability of a given Product, material to be recovered at end of its life cycle and remanufactured into new Product, for reuse by others.

G. Recycle: Remove waste material from Existing Project Site to another Site for remanufacture into a new Product, for reuse by others.

H. Recycling: Process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: Give back reusable items, unused Products to vendors for credit.

J. Reuse: Reuse construction waste material in some manner.

K. Salvage: Remove waste material from Existing Project Site to another site for resale, reuse by others.

L. Sediment: Soil, other debris that has been eroded and transported by storm.

M. Source Separation: Act of keeping different types waste materials separate, beginning from first time they become waste.

N. Toxic: Poisonous to humans, animals either immediately or after period of exposure.

O. Trash: Any Product, material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached end of its useful life in its intended use.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Once Owner has determined which landfill alternatives addressed in the Proposal above are acceptable, prepare and submit Waste Management Plan for review, within (10) Ten calender days.

C. Waste Disposal Reports: Submit at specified intervals, including details of all quantities of trash, waste, means of disposal or reuse and all related costs; show both totals to date and since last Report.

1. Submit updated Report within each Application for Progress Payment; failure to submit Report will delay Payment.

2. Submit Report on Form acceptable to Owner.
3. Landfill Disposal: Include following information:
    a. Identification of material.
    b. Amount, in tons or cubic yards, of trash, waste material from Existing Project Site, disposed of with in landfills.
    c. State identity of landfills, total amount of tipping fees paid and total disposal cost.
    d. Include manifests, weight tickets, receipts and invoices as evidence of quantity and cost.
4. Recycled, Salvaged Materials: Include following information for each:
    a. Identification of material, including those retrieved by installer for use upon other Projects.
    b. Amount, in tons or cubic yards, date removed from Existing Project Site and receiving party.
    c. Transportation cost, amount paid or received for material and net total cost or savings of salvage, recycling each material.
    d. Include manifests, weight tickets, receipts, and any invoices as evidence of quantity and cost.
    e. **Certification by receiving party that materials will not be disposed of in landfills or by incineration.**
5. Material Reused upon Existing Project Site: Include following information for each:
    a. Identification of material and how it was used within this particular project.
    b. Amount, in tons or cubic yards.
    c. Include weight tickets as evidence of quantity.
6. Other Disposal Methods: Include information similar to that described above, as appropriate to disposal method.

PART 2 PRODUCTS

2.01 PRODUCT SUBSTITUTIONS

A. Reference Section 01 60 00 - Product Requirements for additional Content.

B. For each proposed Product substitution, submit the following
    1. Relative amount of waste produced, compared to specified product.
    2. Cost savings on waste disposal, compared to specified product, to be deducted from the Contract Price.
    3. Proposed disposal method for waste product.
    4. Markets for recycled waste product.

PART 3 EXECUTION

3.01 WASTE MANAGEMENT PROCEDURES

A. Reference Section 01 10 00 - Summary for additional Content.

B. Reference Section 01 30 00 - Administrative Requirements for additional Conten

C. Reference Section 01 50 00 - Temporary Facilities and Controls for additional Content.

D. Reference Section 01 60 00 - Product Requirements for additional Content.

E. Reference Section 01 70 00 - Execution and Closeout Requirements for additional Content.

3.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an Existing Project Site person, persons who shall be responsible for instructing workers, overseeing and documenting, coordinating results of Waste Management Plan.

B. Communication: Distribute copies of Waste Management Plan to Existing Project Site Superintendent, all Subcontractors, all Vendors, Owner and Architect.

C. Instruction: Provide Existing Project Site instruction, re: appropriate separation, handling, recycling, salvage, reuse and return methods to be implemented by all parties, during appropriate stages of the project.

D. Meetings: Review, discuss all trash, waste management goals, issues at following;
   1. Prebid Meeting.
   2. Preconstruction Meeting
   3. All Existing Project Site, Safety Meetings.

E. Facilities: Provide specific facilities for separation, storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors, installers, vendors.
   1. As a minimum, provide:
      a. Separate area for storage of materials to be reused on-site, such as wood cut-offs for blocking.
      b. Separate dumpsters for each category of recyclable.
      c. Recycling bins at worker lunch area.
   2. Provide all containers, including lockable lids, as required.
   3. Provide temporary enclosures all piles of separated materials to be recycled or salvaged.
   4. Locate enclosures out of way of all construction traffic.
   5. Provide adequate space for pick up, delivery and convenience, all subcontractors and Vendors.
   6. Keep all recycling, trash, waste bin areas neat and thoroughly clean and clearly marked, as rwquired to avoid any contamination of materials.

F. Hazardous Wastes: Separate, store, and dispose of all hazardous wastes per applicable regulations.

G. Recycling: Separate, store, protect, handle, within Existing Project Sitee, all recyclable waste Products, as required to prevent any contamination of materials and maximize recyclability of same. Schedule timely pickups from Existing Project Site, for delivery to appropriate recycling facilitis.

H. Reuse of Materials: Set aside, sort and protect all separated Products, as required for appropiate reuse.

I. Salvage: Set aside, sort, and protect all Products scheduled to be salvaged for reuse.

END OF SECTION

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Closeout Submittals.

1.02 RELATED REQUIREMENTS

A. Section 00 72 00 - General Conditions and 00 73 00 - Supplementary Conditions.

B. Section 01 30 00 - Administrative Requirements.

C. Section 01 70 00 - Execution and Closeout Requirements.

D. Individual Product Sections.

1.03 SUBMITTALS

A. Project Record Documents: Submit detailed documents to Architect, **prior to** submission of Final Application for Payment.

B. Operation and Maintenance Data:
   1. Submit (2) two copies of draft formats and outlines of contents, before start of Work.
   2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within (7) seven business days, following acceptance.
   3. Submit (1) one copy of completed documents (21) twenty one business days prior to final inspection. Revise content of all document sets as required, prior to final submission.
   4. Submit (2) two sets of revised final documents, within (7) seven business days of final inspection.

C. Materials Transparency Manual:
   1. Compile and submit both a digital and a printed version of information disclosing materials content for interior finishes, furnishings (including workstations), built-in furniture. Meet IWBI (BS) requirements for format and content.

D. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within (7) seven business days of acceptance.
   2. Provide all other submittals within (7) business days of previously approved Project Substantial Completion Date and prior to submission of Final Application for Payment.
   3. For those items of Work, for which acceptance is delayed beyond Project Substantial Completion Date, submit within (7) seven business days following acceptance, while listing said date of acceptance as the start of applicable warranty period.

PART 2 PRODUCTS-"NOT APPLICABLE"...

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

A. Maintain within Project Site, (1) one set of following record documents, whil erecording any, all actual revisions to said Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and all other modifications to Contract.
   5. All previously reviewed Shop Drawings, Product data, and Product Samples.
   6. All Manufacturer's instructions for assembly, installation, and or adjustments

B. Ensure all entries are complete and accurate, while enabling future reference by Owner.

C. Store all Record Documents separate from those documents used for Construction.

D. Record all information concurrent with Construction progress.

E. Specifications: Legibly mark, record, at each Product Section, detailed description of actual products installed, including the following:
   1. Manufacturer's Name Product Model and Number.
   2. Any previously approved Product Substitutions.
   3. Any revisions incorporated via Addenda.

F. Record Drawings and Shop Drawings: Legibly mark each item, as required to accurately torecord actual construction including:
   1. Measured depths of foundations in relation to finish floor datum.
   2. Measured horizontal and vertical locations of all underground utilities and appurtenances, referenced to all permanent surface improvements.
   3. Measured locations of all internal utilities and appurtenances concealed within construction, referenced to visible and accessible features of said Work.
   4. All Field changes of dimension and detail.
   5. Any details not delineated within Contract drawings.

3.02 OPERATION, MAINTENANCE DATA

A. Source Data: For each Product, list addresses, names and telephone numbers of all Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete all inapplicable information.

C. Drawings: Supplement Product data, as required to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION, MAINTENANCE DATA, MATERIALS, FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional information as specified in individual product specification sections.

E. Where additional instructions are required, beyond the Manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of said specific products.

3.04 OPERATION, MAINTENANCE DATA, EQUIPMENT, SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Detailed description of unit, system, and all component parts.
   2. Identify function, normal operating characteristics, and any limiting conditions, particular to this Project.
   3. Include all performance curves, including all engineering data and tests.
   4. Complete nomenclature and model numbers for all replaceable parts.

B. Where additional instructions are required, beyond Manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of specific Products.

C. Panelboard Circuit Directories: Provide typed electrical service characteristics, controls, and communications.

D. Include detailed color coded wiring diagrams as previously installed.

E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions, particular to this Project Site.

F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
   1. Include HVAC outdoor and exhaust air damper calibration strategy.
      a. Include provisions which ensure that full closure of dampers can be achieved.
   2. Include Carbon Dioxide Monitoring Protocol.
   3. Include Carbon Monoxide Monitoring Protocol.
   4. Include Frost Mitigation Strategy for ventilation heat-recovery system.

G. Provide servicing and lubrication schedule, and list of lubricants required.

H. Include manufacturer's printed operation and maintenance instructions.

I. Include sequence of operation by controls manufacturer.

J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

K. Provide control diagrams by controls manufacturer as installed.

L. Provide Contractor's coordination drawings, with color coded piping diagrams as installed.

M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

O. Include test and balancing reports.

P. Additional Requirements: As specified in individual product specification sections.

3.05 ASSEMBLY, OPERATION, MAINTENANCE MANUALS

A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Where systems involve more than one specification section, provide separate tabbed divider for each system.

C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.

E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.

H. Text: Manufacturer's printed data, or typewritten data on 20 pound paper.

I. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

J. Arrangement of Contents: Organize each volume in parts as follows:
   1. Project Directory.
   2. Table of Contents, of all volumes, and of this volume.
   3. Operation and Maintenance Data: Arranged by system, then by product category.
      a. Source data.
      b. Product data, shop drawings, and other submittals.
      c. Operation and maintenance data.
      d. Field quality control data.
      e. Photocopies of warranties and bonds.
   4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.

3.06 WARRANTIES, BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co execute submittals as required.

D. Retain warranties and bonds until time specified for submittal.

E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.

F. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.

G. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

H. Table of Contents: Neatly typed, within same sequence of Table of Contents, Project Manual, with each item identified with the number and title of that Specification Section in which specified, and Name of Product, Work item.

I. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of Products, Systems as directed by Architect.

B. Thorough training of Owner personnel in operation, maintenance required for the following, this paticular Project:
   1. All software operated systems.
   2. Mechanical systems, equipment.
   3. Plumbing systems, equipment.
   4. Fire Protection, Sprinkler systems, equipment
   5. Electrical systems, equipment.
   6. Conveying systems, equipment.
   7. Landscape irrigation systems, equipment, if applicaple.
   8. Those items specified withn individual Product Sections.

C. Training of Owner personnel in care, cleaning, maintenance, and repair is required for the following:
   1. Roofing, waterproofing, all other weather exposed or moisture protection Products.
   2. All finishes, including, but not limited to, flooring, walls and ceilings.
   3. Fixtures and fittings.
   4. Those items specified within individual Product Sections.

1.02 RELATED REQUIREMENTS

A. Section 01 78 00 - Closeout Submittals.

B. Section 01 91 13 - General Commissioning Requirements

C. Other Specification Sections: Additional requirements for demonstration and training, via individual Specifications Sections..

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.
   1. Make all Submittals specified within this Section, and elsewhere where indicated for commissioning purposes, directly to the Commissioning Provider.
   2. Submit one copy to the Commissioning Provider, not to be returned.
   3. Make commissioning submittals on time schedule specified by Commissioning Provider.
   4. Submittals indicated as "Draft" are intended for the use of the Commissioning Provider in preparation of overall Training Plan; submit in editable electronic format only.

B. Training Plans: Owner shall designate personnel to be trained; tailor said training to needs, skill level of all attendees.
   1. Submit to Architect for transmittal to Owner.
   2. Submit to Commissioning Provider for review and inclusion within overall training plan.
   3. Submit not less than (21) Twenty One calendar days prior to start of training.
   4. Revise and resubmit until acceptable.
   5. Provide an overall schedule showing all training sessions.
   6. Include at least the following for each training session:
      a. Identification, date, time, and duration.
      b. Description of Products, systems to be covered.
      c. Name of firm and person conducting training; includeing qualifications.
      d. Intended audience, such as job description, title.
      e. Objectives of training and suggested methods of ensuring adequate training.
      f. Methods to be used, such as classroom lecture, live demonstrations.
      g. Media to be used, such a slides, hand outs.

h. All training equipment required, shall be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of (3) three attendees per training session.
   1. Include those applicable portions of O&M manuals.
   2. Include copies of all hand outs, slides, overheads, video presentations, that are not included within O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

D. Training Reports:
   1. Identification of each training session, date, time and duration.
   2. Sign in sheet showing names and job titles of all attendees.
   3. List of attendee questions and written answers given, including copies of and references to supporting documentation required for clarification; include all answers to questions that could not be answered in original training session.
   4. Include Commissioning Provider's written acceptance of training session.

E. Video Recordings: Submit digital video recording of each demonstration and training session for Owner's subsequent use.
   1. Format: High definition DVD Disc.
   2. Label each disc, container with thoroughly detailed session identification and date.

1.04 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of all elevant Products, systems.
   1. Provide as instructors the most qualified trainer of those contractors, installers who actually supplied, installed said systems, equipment particular to this Project.
   2. Where a single person is not familiar with all aspects, provide those specialists with necessary qualifications, this particular Project.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION, GENERAL

A. Those demonstrations conducted during systems start up **do not** qualify as demonstrations for the purposes of this Section.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start up, shut down, seasonal changeover, emergency conditions, troubleshooting and maintenance procedures, including all scheduled, preventive maintenance.
   1. Perform all demonstrations not less than (14) Fourteen calendar days prior to previously scheduled Project Substantial Completion Date.
   2. For any equipment, systems requiring seasonal operation, perform demonstrations for other season within six months.

E. Non Operating Products: Demonstrate cleaning, scheduled preventive maintenance and repair procedures.
   1. Perform demonstrations not less than (14) Fourteen calendar days prior to previously scheduled Project Substantial Completion Date.

3.02 TRAINING, GENERAL

A. Commissioning Provider will prepare Training Plan based on draft plans submitted.

B. Conduct all training upon Existing Project Site.

C. **Do not** start any training until all Functional Testing has been fully completed.

D. Provide all training in minimum (90) minute segments.

E. Commissioning Provider shall be responsible for determining that training was satisfactorily completed.

F. Training schedule shall be subject to availability of Owner's personnel; re schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

G. Review of Facility Policy on Operation and Maintenance Data: During training discuss the following:
   1. Location of O&M manuals, procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of O&M manuals.

H. Product, System Specific Training:
   1. Review all applicable O&M manuals.
   2. For all systems, provide overview of system operation, design parameters, constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start up, shut down, seasonal changeover, emergency procedures and maintenance, including all preventative maintenance.
   4. Provide hands on training, all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss all relevant health, safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss all Warranties, guarantees, including any procedures necessary to avoid voiding saidcoverage.
   9. Review all recommended tools, spare parts inventory suggestions of each Manufacturer.
   10. Review all spare parts, tools required to be furnished by Contractor.
   11. Review all spare parts suppliers, sources and procurement procedures.

I. **Be prepared** to answer all questions raised by attendees; if unable to answer during training session, provide written response within (24) Twenty Four hours.

END OF SECTION

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SECTION 01 91 13
GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Commissioning is intended to achieve following specific objectives; this Section specifies the Contractor's responsibilities for commissioning:
   1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.
   2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Provider are utilized to achieve this.
   3. Verify that operation and maintenance manuals submitted to Owner are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.
   4. Verify that the Owner's operating personnel are adequately trained: Formal training conducted by Contractor is utilized to achieve this.

B. Commissioning, including Functional Tests, O&M documentation review, and training, is to occur after startup and initial checkout and be completed before Functional Completion.

C. The Commissioning Provider directs and coordinates all commissioning activities; this section describes some but not all of the Commissioning Provider's responsibilities.

D. The Commissioning Provider is employed by Owner.

E. The Commissioning Provider is employed by Contractor.

1.02 SCOPE OF COMMISSIONING

A. The following are to be commissioned:
   1. Building envelope:
      a. Thermal and moisture integrity.
      b. Air tightness.
   2. Structural systems.
   3. Elevating and conveying systems.
   4. Fire Protection Systems.
   5. Plumbing Systems:
      a. Water heaters.
      b. Booster pumps.
      c. Laboratory gas systems.
      d. Medical gas systems.
      e. Landscape irrigation.
   6. HVAC System, including:
      a. Major and minor equipment items.
      b. Piping systems and equipment.
      c. Ductwork and accessories.
      d. Terminal units.
      e. Control system.
      f. Sound control devices.
      g. Vibration control devices.
      h. Variable frequency drives.
   7. Special Ventilation:
      a. Fume hoods.
      b. Laboratory pressurization.

c. Specialty fans.
d. Egress pressurization.

8. Integrated Automation.
9. Electrical Systems:
   a. Power quality.
   b. Emergency power systems.
   c. Uninterruptible power systems.
   d. Lighting controls other than manual switches.
10. Electronic Safety and Security:
    a. Security system, including doors and hardware.
    b. Fire and smoke alarms.
11. Communications:
    a. Voice and data systems.
    b. Public address/paging.

B. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.

C. Sound Transmission Class-rated interior partitions.

D. Indoor Air Quality Procedures: The Commissioning Provider will coordinate; Contractor will execute; see Section 01 57 19 - Temporary Environmental Controls.

1.03 RELATED REQUIREMENTS

A. Section 01 33 29.02 - Sustainable Design Reporting - LEED v4: Reporting requirements relating to commissioning.

B. Section 01 57 19 - Temporary Environmental Controls: Precautions and procedures; smoking room testing; building flush-out.

C. Section 01 70 00 - Execution and Closeout Requirements: General startup requirements.

D. Section 01 78 00 - Closeout Submittals: Scope and procedures for operation and maintenance manuals and project record documents.

E. Section 01 79 00 - Demonstration and Training: Scope and procedures for Owner personnel training.

F. Section 01 91 14 - Commissioning Authority Responsibilities.

G. Section 23 08 00 - Commissioning of HVAC: HVAC control system testing; other requirements.

H. Section 25 08 00 - Commissioning of Integrated Automation.

1.04 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ANSI/RESNET/ICC 301 - Standard for the Calculation and Labeling of the Energy Performance of Dwelling and Sleeping Units Using an Energy Rating Index; 2022.

B. ANSI/RESNET/ICC 380 - Standard for Testing Airtightness of Building, Dwelling Unit, and Sleeping Unit Enclosures; Airtightness of Heating and Cooling Air Distribution Systems; and Airflow of Mechanical Ventilation Systems; 2022.

C. ASHRAE Std 202 - The Commissioning Process Requirements for New Buildings and New Systems; 2024.

D. ASTM E336 - Standard Test Method for Measurement of Airborne Sound Attenuation Between Rooms in Buildings; 2025a.

E. ASTM E779 - Standard Test Method for Determining Air Leakage Rate by Fan Pressurization; 2019.

F. ASTM E1827 - Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door; 2022.

G. CSI/CSC MF - Masterformat; 2016.

H. NEBB S110 - Whole Building Technical Commissioning of New Construction; 2019, with Errata (2022).

I. PECI (Samples) - Sample Forms for Prefunctional Checklists and Functional Performance Tests; Current Edition.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.
   1. Make all Submittals specified, this Section and elsewhere, as indicated for commissioning purposes, directly to Commissioning Provider.
   2. Submit one copy to Commissioning Provider, **not to be returned**.
   3. Make all commissioning Submittals on time, schedule specified by Commissioning Provider.
   4. Submittals indicated as "Draft" are intended for the use of the Commissioning Provider in preparation of Prefunctional Checklists or Functional Test requirements; submit only within editable electronic format.
   5. As soon as possible after submittals made to Architect are approved, submit copies of approved submittals to Commissioning Provider.

B. Product Data: All Submittals provided to Architect shall include the following:
   1. Manufacturer's thoroughly detailed Product data,cut sheets and shop drawings, particular to this Project.
   2. Manufacturer's thoroughly detailed written installation instructions.
   3. Startup, operating and troubleshooting procedures.
   4. Fan and pump curves.
   5. Factory test reports.
   6. Thoroughly detailed Warranty information, particular to this Project, including all Owner responsibities regarding keeping said Warranties in force.

C. Manufacturers' Instructions: Submit copies of all Manufacturer provided written instructions that are shipped with equipment, immediately following delivery of said eauipment.

D. Startup Plans and Reports, particular to this Project.

E. Completed Prefunctional Checklists.

F. Commissioning Issues Log:
   1. Construction observations.
   2. Supporting photographs.

G. Field test report of partitions, noise isolation.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified within this Section, minimum (15) Fifteen Years documented experience.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup, initial checkout and required Functional Testing.

B. Provide all standard testing equipment required to perform building envelope air tightness testing.

C. Calibration Tolerances: Provide testing equipment of sufficient quality, accuracy to test, measure system performance. Following minimum requirements shall apply:
   1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degree F and resolution of plus/minus 0.1 degree F.
   2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.

3. Calibration: According to Manufacturer's recommended intervals, when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.

D. Equipment Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments shall become property of Owner.

E. Dataloggers: Independent equipment, software as required for monitoring flows, currents, status, pressures of said equipment;

PART 3 EXECUTION

3.01 COMMISSIONING PLAN

A. Commissioning Plan.
   1. Attend all meetings called by Commissioning Provider
   2. Require attendance, participation of all relevant subcontractors, installers, suppliers, vendors and Manufacturer Representatives.

B. Contractor Contractor shall be solely responsible for full compliance with Commissioning Plan, this particular Project.

C. Commissioning Plan: Commissioning schedule, procedures, and coordination requirements for all parties in the commissioning process.
   1. Commissioning will be phased (by floors, for example).

D. Design Documentation: Thoroughly detailed documentation of all functional requirements, this particular Project; descriptions of systems, components and those methods chosen to meet design intent.
   1. Basis of all required Documentation shall be as directed by Architect.

E. Commissioning Schedule:
   1. Submit anticipated dates of startup, each item of equipment and system to Commissioning Provider within 60 days after award of contract.
   2. Re submit anticipated startup dates monthly, but not less than 4 weeks prior to startup.
   3. Prefunctional Checklists, Functional Tests shall be performed in sequence from components, to subsystems, to systems.
   4. Provide sufficient notice to Commissioning Provider for delivery of all relevant Checklists and Functional Test proced

3.02 DOCUMENTATION IDENTIFICATION SYSTEM

A. Give each submitted form or report a unique identification; use the following scheme.

B. Type of Document: Use the following prefixes:
   1. Startup Plan: SP-.
   2. Startup Report: SR-.
   3. Prefunctional Checklist: PC-.
   4. Functional Test Procedure: FTP-.
   5. Functional Test Report: FTR-.

C. System Type: Use the first 4 digits from CSI/CSC MF (Master Format), that are applicable to the system; for example:
   1. 2300: HVAC system as a whole.
   2. 2320: HVAC Piping and Pumps.
   3. 2330: HVAC Air Distribution.

D. Component Number: Assign numbers sequentially, using 1, 2, or 3 digits as required to accommodate the number of units in the system.

E. Test, Revision, or Submittal Number: Number each successive iteration sequentially, starting with 1.

F. Example: PC-2320-001.2 would be the Prefunctional Checklist for equipment item 1 in the HVAC piping system, probably a pump; this is the second, revised submittal of this checklist.

3.03 STARTUP PLANS, REPORTS

A. Startup Plans: For each item of equipment, system for which Manufacturer provides a startup plan, submit tplan not less than 8 weeks prior to startup.

B. Startup Reports: For each item of equipment, system for which the Manufacturer provides astartup checklist (or startup plan or field checkout sheet), document compliance by submitting the completed startup checklist prior to startup, signed and dated by responsible entity.

C. Submit directly to the Commissioning Provider.

3.04 PREFUNCTIONAL CHECKLISTS

A. A Prefunctional Checklist is required to be filled out for each item of equipment or other assembly specified to be commissioned.
   1. No sampling of identical or near identical items shall be allowed.
   2. These checklists **do not** replace Manufacturers' recommended startup checklists.
   3. Prefunctional Checklist forms will not be complete until after award of the contract; the following types of information will be gathered via the completed Checklist forms:
      a. Certification by installing contractor that the unit is properly installed, started up, and operating and ready for Functional Testing.
      b. Confirmation of receipt of each shop drawing and commissioning submittal specified, itemized by unit.
      c. Manufacturer, model number, and relevant capacity information; list information "as specified," "as submitted," and "as installed."
      d. Serial number of installed unit.
      e. List of inspections to be conducted to document proper installation prior to startup and Functional Testing; these will be primarily static inspections and procedures; for equipment and systems may include normal manufacturer’s start-up checklist items and minor testing.
      f. Sensor and actuator calibration information.

B. Contractor is responsible for filling out Prefunctional Checklists, after completion of installation and before startup; witnessing by the Commissioning Provider is not required unless otherwise specified.
   1. Each line item without deficiency is to be witnessed, initialed, and dated by the actual witness; checklists are not complete until all line items are initialed and dated complete without deficiencies.
   2. Checklists with incomplete items may be submitted for approval provided the Contractor attests that incomplete items do not preclude the performance of safe and reliable Functional Testing; re-submission of the Checklist is required upon completion of remaining items.
   3. Individual Checklists may contain line items that are the responsibility of more than one installer; Contractor shall assign responsibility to appropriate installers or subcontractors, with identification recorded on the form.
   4. If any Checklist line item is not relevant, record reasons on the form.
   5. Contractor may independently perform startup inspections and/or tests, at Contractor's option.
   6. Regardless of these reporting requirements, Contractor is responsible for correct startup and operation.
   7. Submit completed Checklists to Commissioning Provider within 2 days of completion.

C. Commissioning Provider is responsible for furnishing the Prefunctional Checklists to Contractor.
   1. Initial Drafts: Contractor is responsible for initial draft of Prefunctional Checklist where so indicated in Contract Documents.

2. Provide all additional information requested by Commissioning Provider to aid in preparation of checklists, such as shop drawing submittals, manufacturers' startup checklists and O&M data.
3. Commissioning Provider may add any relevant items deemed necessary regardless of whether they are explicitly mentioned in Contract Documents or not.
4. When asked to review the proposed Checklists, do so in a timely manner.

D. Commissioning Provider Witnessing: Required for:
1. Each piece of primary equipment, unless sampling of multiple similar units is allowed by the commissioning plan.
2. A sampling of non-primary equipment, as allowed by the commissioning plan.

E. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.
1. If difficulty in correction would delay progress, report deficiency to the Commissioning Provider immediately.

3.05 FUNCTIONAL TESTS

A. A Functional Test is required for each item of equipment, system, or other assembly specified to be commissioned, unless sampling of multiple identical or near-identical units is allowed by the final test procedures.

B. Contractor is responsible for execution of required Functional Tests, after completion of Prefunctional Checklist and before closeout.

C. Commissioning Provider is responsible for witnessing and reporting results of Functional Tests, including preparation and completion of forms for that purpose.

D. Contractor is responsible for correction of deficiencies and re-testing at no extra cost to Owner; if a deficiency is not corrected and re-tested immediately, the Commissioning Provider will document the deficiency and the Contractor's stated intentions regarding correction.
1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with Contract Documents or does not perform properly.
2. When the deficiency has been corrected, the Contractor completes the form certifying that the item is ready to be re-tested and returns the form to the Commissioning Provider; the Commissioning Provider will reschedule the test, and the Contractor shall re-test.
3. Identical or Near-Identical Items: If 10 percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
4. Contractor shall bear the cost of Owner and Commissioning Provider personnel time witnessing re testing.
5. Contractor shall bear the cost of Owner and Commissioning Provider personnel time witnessing re-testing if the test failed due to failure to execute the relevant Prefunctional Checklist correctly; if the test failed for reasons that would not have been identified in the Prefunctional Checklist process, Contractor shall bear the cost of the second and subsequent re tests.

E. Functional Test Procedures:
1. Some test procedures are included in Contract Documents; where Functional Test procedures are not included in Contract Documents, test procedures will be determined by the Commissioning Provider with input by and coordination with Contractor.
2. Examples of Functional Testing:
a. Test the dynamic function and operation of equipment and systems (rather than just components) using manual (direct observation) or monitoring methods under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint).

b. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc.
c. Systems are run through all the HVAC control system's sequences of operation and components are verified to be responding as the sequence's state.
d. Traditional air or water test and balancing (TAB) is not Functional Testing; spot checking of TAB by demonstration to the Commissioning Provider is Functional Testing.

F. Deferred Functional Tests: Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions; performance of these tests remains the Contractor's responsibility regardless of timing.

3.06 SENSOR, ACTUATOR CALIBRATION

A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gauges, and all actuators (dampers and valves) on this piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

B. Calibrate using the methods described below; alternate methods may be used, if approved by Architect beforehand. See PART 2 for test instrument requirements. Record methods used on the relevant Prefunctional Checklist or other suitable forms, documenting initial, intermediate, and final results.

C. All Sensors:
1. Verify that sensor location is appropriate and away from potential causes of erratic operation.
2. Verify that sensors with shielded cable are grounded only at one end.
3. For sensor pairs that are used to determine a temperature or pressure difference, for temperature make sure they are reading within 0.2 degree F of each other, and for pressure, within tolerance equal to 2 percent of the reading, of each other.
4. Tolerances for critical applications may be tighter.

D. Sensors Without Transmitters - Standard Application:
1. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
2. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.
3. If not, install offset, calibrate or replace sensor.

E. Sensors With Transmitters - Standard Application.
1. Disconnect sensor.
2. Connect a signal generator in place of sensor.
3. Connect ammeter in series between transmitter and building automation system control panel.
4. Using manufacturer's resistance-temperature data, simulate minimum desired temperature.
5. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter.
6. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the building automation system.
7. Record all values and recalibrate controller as necessary to comply with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction.
8. Reconnect sensor.
9. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
10. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.

11. If not, replace sensor and repeat.
12. For pressure sensors, perform a similar process with a suitable signal generator.

F. Sensor Tolerances for Standard Applications: Plus/minus the following maximums:
1. Watthour, Voltage, Amperage: 1 percent of design.
2. Pressure, Air, Water, Gas: 3 percent of design.
3. Air Temperatures (Outside Air, Space Air, Duct Air): 0.4 degrees F.
4. Relative Humidity: 4 percent of design.
5. Barometric Pressure: 0.1 inch of Hg.
6. Flow Rate, Air: 10 percent of design.
7. Flow Rate, Water: 4 percent of design.
8. AHU Wet Bulb and Dew Point: 2.0 degrees F.
9. Hot Water Coil and Boiler Water Temperature: 1.5 degrees F.
10. Cooling Coil, Chilled and Condenser Water Temperatures: 0.4 degrees F.
11. Combustion Flue Temperature: 5.0 degrees F.

G. Critical Applications: For some applications more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.

H. Valve/Damper Stroke Setup and Check:
1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
2. Set pump/fan to normal operating mode.
3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.
4. Command valve/damper to open; verify position is full open and adjust output signal as required.
5. Command valve/damper to a few intermediate positions.
6. If actual valve/damper position does not reasonably correspond, replace actuator or add pilot positioner (for pneumatics).

I. Isolation Valve or System Valve Leak Check: For valves not associated with coils.
1. With full pressure in the system, command valve closed.
2. Use an ultra-sonic flow meter to detect flow or leakage.

3.07 TEST PROCEDURES, GENERAL

A. Provide skilled technicians to execute starting of equipment and to execute the Functional Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.

B. Provide all necessary materials and system modifications required to produce the flows, pressures, temperatures, and conditions necessary to execute the test according to the specified conditions. At completion of the test, return all affected equipment and systems to their pre-test condition.

C. Sampling: Where Functional Testing of fewer than the total number of multiple identical or near identical items is explicitly permitted, perform sampling as follows:
1. Identical Units: Defined as units with same application and sequence of operation; only minor size or capacity difference.
2. **Sampling is not allowed for:**
   a. Major equipment.
   b. Life safety, critical equipment.
   c. Prefunctional Checklist execution.
3. XX = the percent of the group of identical equipment to be included in each sample; defined for specific type of equipment.
4. YY = the percent of the sample that if failed will require another sample to be tested; defined for specific type of equipment.

5. Randomly test at least XX percent of each group of identical equipment, but not less than three units. This constitutes the "first sample."
6. If YY percent of the units in the first sample fail, test another XX percent of the remaining identical units.
7. If YY percent of the units in the second sample fail, test all remaining identical units.
8. If frequent failures occur, the Commissioning Provider may stop the testing and require Contractor to perform and document a checkout of the remaining units prior to continuing testing.

D. Manual Testing: Use hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the “observation”).

E. Simulating Conditions: Artificially create the necessary condition for the purpose of testing the response of a system; for example apply hot air to a space sensor using a hair dryer to see the response in a VAV box.

F. Simulating Signals: Disconnect the sensor and use a signal generator to send an amperage, resistance or pressure to the transducer and control system to simulate the sensor value.

G. Over-Writing Values: Change the sensor value known to the control system in the control system to see the response of the system; for example, change the outside air temperature value from 50 to 75 degrees Fahrenheit, as required to confirm economizer operation.

H. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.

I. Monitoring: Record parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of the relevant control systems; where monitoring of specific points is called for in Functional Test Procedures:
1. All points that are monitored by the relevant control system shall be trended by Contractor; at the Commissioning Provider's request, Contractor shall trend up to 20 percent more points than specified at no extra charge.
2. Other points will be monitored by the Commissioning Provider using dataloggers.
3. At the option of the Commissioning Provider, some control system monitoring may be replaced with datalogger monitoring.
4. Provide hard copies of monitored data in columnar format with time down left column and at least 5 columns of point values on same page.
5. Graphical output is desirable and is required for all output if the system can produce it.
6. Monitoring may be used to augment manual testing.

3.08 BUILDING ENVELOPE COMMISSIONING

A. General: Comply with the following procedural requirements:
1. NEBB S110 Whole Building Technical Commissioning of New Construction.
2. ASTM E779 Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
3. ASTM E1827 Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door.
4. ANSI/RESNET/ICC 301 Standard for the Calculation and Labeling of the Energy Performance of Low-Rise Residential Buildings using an Energy Rating Index.
5. ANSI/RESNET/ICC 380 Standard for Testing Airtightness of Building Enclosures, Airtightness of Heating and Cooling Air Distribution Systems, and Airflow of Mechanical Ventilation Systems.

B. Verify building envelope has been sufficiently completed for testing to commence.

C. Conduct ongoing inspections as construction progresses to document satisfactory installation conditions. related to thermal and moisture integrity of the building envelope that become concealed upon completion of construction.

D. Submit a detailed narrative of proposed pressure test procedures prior to the test. Include a plan view showing proposed installation locations (personnel doors or other similar openings) for blower doors (or flexible ducts for trailer-mounted fans, if used).

E. Avoid testing on days forecast to experience high winds, rain, or snow.

F. Test the completed building and demonstrate that the air leakage rate of the building envelope does not exceed the specified requirements.
   1. Use equipment and methods necessary to produce indoor/outdoor pressure differential of 0.2 inches w.g..
   2. Use RESNET accredited software to document salient features of project's building envelope and to calculate the HERS Index Score.

G. Determine location and nature of undesirable air leakage pathways using methods specified in ASTM E1186-17 Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.

H. Deficiencies: Correct all deficiencies and re inspect, re test, as required, at no cost to Owner.
   1. If difficulty in correction would delay progress, report deficiency to the Commissioning Provider immediately.
   2. Insulation for remedying building envelope deficiencies evidenced as excessive air leakage is specified in Section 07 21 00.
   3. Air barriers for remedying building envelope deficiencies evidenced as excessive air leakage are specified in Section 07 27 00.
   4. Sealants for remedying building envelope deficiencies evidenced as excessive air leakage are specified in Section 07 92 00.

3.09 FIELD TESTING, COMMISSIONING OF PARTITIONS FOR NOISE ISOLATION

A. Conduct testing of partitions requiring a specific STC class indicated on drawings and/or in various specifications sections. Comply with ASTM E336 for testing methods, including requirements of Annex A1 for reduction of flanking sound transmission.

B. Confirm that the FSTC values are not less than 67 percent of design STC values.

C. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Owner.
   1. If difficulty in correction would delay progress, report deficiency to the Commissioning Provider immediately.
   2. Sealants for remedying flanking sound transmission deficiencies evidenced as excessive air leakage are specified in Section 07 92 00.

3.10 OPERATION AND MAINTENANCE MANUALS

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Add design intent documentation furnished by Architect to manuals prior to submission to Owner.

C. Submit manuals related to items that were commissioned to Commissioning Provider for review; make changes recommended by Commissioning Provider.

D. Commissioning Provider will add commissioning records to manuals after submission to Owner.

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Demolition.

B. Selective demolition of Existing Project Site structures, elements.

C. Selective demolition of specific Existing Building Elements.

D. Removal, Abandonment of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 00 31 00 - Available Project Information.

B. Section 01 10 00 - Summary.

C. Section 01 60 00 - Product Requirements.

D. Section 01 70 00 - Execution and Closeout Requirements.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2022, with Errata (2021).

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additonal Content.

B. Existing Project Site Plan, indicate:
   1. All vegetation scheduled to be protected.
   2. All areas scheduled to receive temporary construction, field offices.
   3. All areas scheduled to receive temporary and permanent placement of removed materials.

C. Demolition Plan: Submit thoroughly detailed demolition plan, particulr to this Project, as required by OSHA, those local Authorities having Jurisdiction and Owner's Representative.
   1. Indicate entire extent of demolition, removal sequencing, bracing, shoring,location and construction of barricade fences.
   2. Summary of all safety procedures.
   3. Detailed demolition firm qualifications.

D. Project Record Documents: Accurately locate, record all actual locations, capped, active utilities and all subsurface construction.

1.05 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in type of Work indicated within Contract Documents.
   1. Minimum (20) Twenty Years, documented experience.

PART 2 PRODUCTS; "NOT APPLICABLE, THIS PARTICULAR PROJECT"...

PART 3 EXECUTION

3.01 DEMOLITION

A. Remove only those portions of existing structures, as delineated within Contract Documents.

B. Remove paving and curbs, as required to accomplish this particular Scope of Work indicated within Contract Documents.

C. Break up paving within Existing Project Site, as required to permit natural moisture drainage, while leaving pieces no larger than (1) One square foot.

D. Within area of new construction, remove existing foundation walls and footings to minimum (36) Thirty Six inches below finished grade.

E. Outside area of new construction, remove existing foundation walls, footings to minimum (3) Thirty inches below finished grade.

F. Remove those concrete slabs on grade within site boundaries and as delineated within Contract Documents.

G. Break up concrete slabs on grade within Existing Project Site, as required to to permit natural moisture drainage, while leaving pieces no larger than (1) One square foot.

H. Remove all underground tanks.

I. Remove all underground tanks, currently containing or having once contained any petroleum Products; fill, document, bury all other type, tanks.

J. Remove manholes and manhole covers, curb inlets and catch basins.

K. Remove existing fencesgates.

L. Remove all creosote treated wood utility poles.

M. Backfill all excavations, open pits, and any holes within ground areas, generated as result of removals, using Engineered specified fill compacted per Contract Documents.

3.02 GENERAL PROCEDURES, PROJECT CONDITIONS

A. Comply with all requirements delineated within Section 01 70 00 Execution and Closeout Requirements.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain all required permits.
   2. Fully comply with all applicable requirements of NFPA 241.
   3. **Use of any explosives, upon this particular Existing Project Site, is expressly prohibited.**
   4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   5. Provide, erect, and maintain temporary barriers and security devices.
   6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   8. **Do not** close or obstruct any roadways or sidewalks without all applicable Permits from those authorities having jurisdiction.
   9. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
   10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

C. **Do not** begin removal until receipt of notification to proceed from those authorities Having Jurisdiction and Owner.

D. **Do not** begin removal until all built elements to be salvaged or relocated have been removed.

E. **Do not** begin removal until all vegetation to be relocated has been removed and vegetation to remain has been protected from any damage.

F. Protect all existing structures and those existing elements scheduled to remain.
   1. Provide all bracing and shoring as required by this particular Scope of Work.
   2. **Prevent any** movement or settlement of any adjacent structures.
   3. **Stop all Work immediately,** if any adjacent structures appear to be damaged or in danger.

G. Minimize production of dust due to demolition operations. **Do not** use water, if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or any other pollution.

H. Hazardous Materials:
   1. If hazardous materials are discovered during removal operations, stop Work, immediately and notify Architect and Owner; hazardous materials shall include, but are not limited to regulated asbestos containing materials, lead, PCBs, and mercury.
   2. Hazardous Materials: Fully comply with 29 CFR 1926 State and all Local authorities Having Jurisdiction.

I. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Comply fully with all local requirements, re: Construction Waste Management and Disposal Scope of Work.
   2. Dismantle existing construction and separate materials.
   3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point.

J. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

K. Underground Storage Tanks: Remove and dispose of, as required by those Authorities having Jurisdiction.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. **Do not** disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. **Do not** close, shut off, or disrupt existing utility branches or take offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of all disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

3.04 SELECTIVE DEMOLITION, ALTERATIONS

A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
   1. Verify construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from areas that remain occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of constructio, Reference Section 01 50 00 - Temporary Facilities and Controls, Drawings and Contract Documents for additional Content.

C. Maintain weatherproof exterior building enclosure, except for interruptions required for replacement or modifications; prevent water and humidity damage.

D. Remove existing work as indicated and required to accomplish this particular Scope of Work.

1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction indicated.
2. Remove those items delineated within Drawings.

E. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as required by this particular Scope
   1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Reference Section 01 10 00 - Summary for additional Content.
   4. Verify that abandoned services serve only abandoned facilities before removal.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Thoroughly protect all existing Work to remain.
   1. Prevent any movement of structure. Provide shoring and bracing as required.
   2. Perform all cutting, as required to accomplish all removal Work neatly and as delineated within Contract Documents.
   3. Replace all adjacent construction and finishes, damaged during Scope of Work, immediately.

3.05 DEBRIS, WASTE REMOVAL

A. **Remove all** Construction debris, Demolition debres and refuse from Existing Project SIte, immediately.

B. **Remove all** materials, not scheduled to be reused within Existing Project Site.

C. **Leave entitre** Existing Project Site within thoroughly clean condition and ready for this particular subsequent Scope of Work

D. **Thoroughly clean all** spillage, wind blown debris, entire Existing Project Site, immediately.

END OF SECTION

SECTION 03 05 16
UNDERSLAB VAPOR BARRIER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Underslab Vapor Barrier.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 03 30 00 - Cast in Place Concrete.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

B. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Submit Manufacturer's thoroughly detailed Product Data, particular to this Project.

C. Test Data: Submit thoroughly detailed Test Reports, confirming full compliance with Contract Documents.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately represent construction and accessories.

E. Manufacturer's Installation Instructions: Provide Manufacturer's written Installation Instructions, particular to this Project and coordinated with all adjacent construction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Underslab Vapor Barrier:
   1. Water Vapor Permeance: Not more than 0.010 perms, maximum.
   2. Fully complying with ASTM E1745 Class A.
   3. Minimum thickness: 15 mils.
   4. Basis of Design:
      a. Stego Industries L.L.C.: www.stegoindustries.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

B. Accessory Products: Vapor barrier, Manufacturer's recommended tape, adhesive, mastic, etc., for sealing seams and penetrations within vapor barrier.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Confirm all surfaces, over which vapor barrier were previously completed and ready to receive Work, this Section, prior to beginning any Work, this Section.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install all Work, this Section, in full accordance with Manufacturer's instructions, ASTM E1643.

B. Install all Work, this Section, under interior slabs on grade, lap all Work, this Section, over all footings, seal tight to all foundation walls.

C. Lap all joints minimum (8) eight inches.

D. Seal tight all joints, seams and penetrations, only with Manufacturer’s recommended Products, as required to provide fully watertight installation.

E. Penetrations through Work, this Section are expressly prohibited, with the exceptions of permanent utilities and or reinforcing steel Products.

F. **Replace all damaged Work, this Section, prior to covering with any other materials.**

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.
2. Welded-wire reinforcement.

B. Related Requirements:

1. Section 32 13 13 "Concrete Paving" for reinforcing related to concrete pavement and walks.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.
2. Bar supports.
3. Mechanical splice couplers.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.

C. Construction Joint Layout: Indicate proposed construction joints required to build the structure.

1. Location of construction joints is subject to approval of the Architect.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For testing and inspection agency.

B. Welding certificates.

1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4/D1.4M

C. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:
    a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.
2. Mechanical splice couplers.

D. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1. Store reinforcement to avoid contact with earth.

PART 2 - PRODUCTS

2.01 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

B. Low-Alloy Steel Reinforcing Bars: ASTM A706/A706M, deformed.

C. Headed-Steel Reinforcing Bars: ASTM A970/A970M.

D. Steel Bar Mats: ASTM A184/A184M, fabricated from ASTM A615/A615M, Grade 60, deformed bars, assembled with clips.

E. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.02 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete.

C. Mechanical Splice Couplers: ACI 318 Type 1, same material of reinforcing bar being spliced; tension-compression type.

D. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Plain.

2.03 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.01 PREPARATION

A. Protection of In-Place Conditions:

1. Do not cut or puncture vapor retarder.

2. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.02 INSTALLATION OF STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.

B. Accurately position, support, and secure reinforcement against displacement.

1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.

2. Do not tack weld crossing reinforcing bars.

C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.

D. Provide concrete coverage in accordance with ACI 318.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Splices: Lap splices as indicated on Drawings.

1. Bars indicated to be continuous, and all vertical bars shall be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.

2. Stagger splices in accordance with ACI 318.

3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.

4. Weld reinforcing bars in accordance with AWS D1.4/D 1.4M, where indicated on Drawings.

G. Install welded-wire reinforcement in longest practicable lengths.

1. Support welded-wire reinforcement in accordance with CRSI "Manual of Standard Practice."

a. For reinforcement less than W4.0 or D4.0, continuous support spacing shall not exceed 12 inches.

2. Lap edges and ends of adjoining sheets at least one wire spacing plus 2 inches for plain wire and 8 inches for deformed wire.

3. Offset laps of adjoining sheet widths to prevent continuous laps in either direction.

4. Lace overlaps with wire.

3.03 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement.

2. Continue reinforcement across construction joints unless otherwise indicated.

3. Do not continue reinforcement through sides of strip placements of floors and slabs.

B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.04 INSTALLATION TOLERANCES

A. Comply with ACI 117.

3.05 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Inspections:

1. Steel-reinforcement placement.

2. Steel-reinforcement mechanical splice couplers.
3. Steel-reinforcement welding.

END OF SECTION

SECTION 03 30 00

CAST IN PLACE CONCRETE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.
2. Section 312000 "Earth Moving" for drainage fill under slabs-on-ground.
3. Section 321313 "Concrete Paving" for concrete pavement and walks.

1.03 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.04 ACTION SUBMITTALS

A. Product Data: For each of the following.

1. Portland cement.
2. Fly ash.
3. Aggregates.
4. Admixtures:
    a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.
5. Vapor retarders.
6. Curing materials.
7. Joint fillers.
8. Repair materials.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Location within Project
4. Durability exposure class.
5. Maximum w/cm.
6. Slump limit.

7. Air content.
8. Nominal maximum aggregate size.
9. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
10. Intended placement method.
11. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Shop Drawings:

1. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
    a. Location of construction joints is subject to approval of the Architect.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Installer: Include copies of applicable ACI certificates.
2. Ready-mixed concrete manufacturer.
3. Testing agency: Include copies of applicable ACI certificates.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Curing compounds.
4. Bonding agents.
5. Adhesives.
6. Vapor retarders.
7. Semirigid joint filler.
8. Joint-filler strips.
9. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.
2. Fly ash.
3. Aggregates.
4. Admixtures:

D. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances.

E. Field quality-control reports.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician.

1. Post-Installed Concrete Anchors Installers: ACI-certified Adhesive Anchor Installer.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.

1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301.

1.08 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.

1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

3. Do not use frozen materials or materials containing ice or snow.

4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.

5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.

2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.01 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless modified by requirements in the Contract Documents.

2.02 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.

2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.

3. Obtain aggregate from single source.

4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I/II, gray.

2. Fly Ash: ASTM C618, Class C or F.

C. Normal-Weight Aggregates: ASTM C33/C33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

1. Alkali-Silica Reaction: Comply with one of the following:

a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.

b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.

c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. for moderately reactive aggregate or 3 lb./cu. yd. for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301.

2. Maximum Coarse-Aggregate Size: 1 inch nominal.

3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260/C260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.

2. Retarding Admixture: ASTM C494/C494M, Type B.

3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.

F. Water and Water Used to Make Ice: ASTM C94/C94M, potable

2.03 VAPOR RETARDERS

A. Sheet Vapor Retarder, Class A: ASTM E1745, Class A; not less than 15 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.04 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

1. Color:

a. Ambient Temperature Below 50 deg F: Black.

b. Ambient Temperature between 50 deg F and 85 deg F: Any color.

c. Ambient Temperature Above 85 deg F: White.

D. Water: Potable or complying with ASTM C1602/C1602M.

E. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

2.05 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.

B. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

C. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

2.06 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.

2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand, as recommended by underlayment manufacturer.

4. Compressive Strength: Not less than 4100 psi at 28 days when tested in accordance with ASTM C109/C109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.

2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5000 psi at 28 days when tested in accordance with ASTM C109/C109M.

2.07 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.

1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash or Other Pozzolans: 25 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete and concrete with a w/cm below 0.50.

2.08 CONCRETE MIXTURES

A. Class A: Normal-weight concrete used for footings.
1. Minimum Compressive Strength: 4500 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
a. 6 percent, plus or minus 1.5 percent at point of delivery for concrete containing 1-inch nominal maximum aggregate size.

B. Class B: Normal-weight concrete used for interior slabs-on-ground.
1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

C. Class C: Normal-weight concrete used for interior suspended slabs.
1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Maximum w/cm: 0.45.
3. Slump Limit: 8 inches, plus or minus 1 inch for concrete with verified slump of 3 inches plus or minus 1 inch before adding high-range water-reducing admixture or plasticizing admixture at Project site.
4. Air Content:
a. Do not use an air-entraining admixture or allow total air content to exceed 3 percent for concrete used in trowel-finished floors.

2.09 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M, and furnish batch ticket information.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:
1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:

1. Daily access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.03 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.04 INSTALLATION OF VAPOR RETARDER

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.

1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
2. Face laps away from exposed direction of concrete pour.
3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
4. Lap joints 6 inches and seal with manufacturer's recommended tape.
5. Seal perimeter and penetrations in accordance with vapor retarder manufacturer's instructions.
6. Protect vapor retarder during placement of reinforcement and concrete.
    a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder.

3.05 JOINTS

A. Construct joints true to line, with faces perpendicular to surface plane of concrete.

B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.

1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
2. Place joints perpendicular to main reinforcement.
    a. Continue reinforcement across construction joints unless otherwise indicated.
    b. Do not continue reinforcement through sides of strip placements of floors and slabs.
3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.

4. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.

5. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.

D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.

2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints:

1. Install dowel bars and support assemblies at joints where indicated on Drawings.

2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.

F. Dowel Plates: Install dowel plates at joints where indicated on Drawings.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.

2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, but not to exceed the amount indicated on the concrete delivery ticket.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.
2. Deposit concrete to avoid segregation.
3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.
    a. Do not use vibrators to transport concrete inside forms.
    b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
    c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
    d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Do not place concrete floors and slabs in a checkerboard sequence.
2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Maintain reinforcement in position on chairs during concrete placement.
4. Screed slab surfaces with a straightedge and strike off to correct elevations.
5. Level concrete, cut high areas, and fill low areas.
6. Slope surfaces uniformly to drains where required.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

3.07 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.
    a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
    b. Remove projections larger than 1 inch.
    c. Tie holes do not require patching.
    d. Surface Tolerance: ACI 117 Class D.
    e. Apply to concrete surfaces not exposed to public view.
2. ACI 301 Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.
    a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
    b. Remove projections larger than 1/4 inch.
    c. Patch tie holes.

d. Surface Tolerance: ACI 117 Class B.

e. Locations: Apply to concrete surfaces exposed to public view,.

B. Rubbed Finish: Apply the following to as cast surface finishes where indicated on Drawings:

1. Smooth-Rubbed Finish:

a. Perform no later than one day after form removal.

b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.

C. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.

2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.08 FINISHING FLOORS AND SLABS

A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Float Finish:

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.

2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.

3. Apply float finish to surfaces to receive trowel finish.

C. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.

2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.

3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

4. Do not add water to concrete surface.

5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.

6. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:

a. Slabs on Ground:

1) Specified overall values of flatness, F_F 35; and of levelness, F_L 25; with minimum local values of flatness, F_F 24; and of levelness, F_L 17.

b. Suspended Slabs:

1) Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.

3.09 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.
    a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
    b. Cast anchor-bolt insert into bases.
    c. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items.

1. Cast-in inserts and accessories, as shown on Drawings.
2. Screed, tamp, and trowel finish concrete surfaces.

3.10 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. If forms remain during curing period, moist cure after loosening forms.
3. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
    a. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
    b. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
        1) Recoat areas subject to heavy rainfall within three hours after initial application.
        2) Maintain continuity of coating and repair damage during curing period.

C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:
1. Begin curing immediately after finishing concrete.
2. Interior Concrete Floors:
    a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:
        1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
            a) Lap edges and ends of absorptive cover not less than 12-inches.
            b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.
        2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.
            a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
            b) Cure for not less than seven days.
        3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:
            a) Water.
            b) Continuous water-fog spray.
    b. Floors to Receive Curing Compound:
        1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
        2) Recoat areas subjected to heavy rainfall within three hours after initial application.
        3) Maintain continuity of coating, and repair damage during curing period.
        4) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing

compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

3.11 TOLERANCES

A. Conform to ACI 117.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler in accordance with manufacturer's written instructions.

1. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete:

1. Repair and patch defective areas when approved by Architect.
2. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.
    a. Limit cut depth to 3/4 inch.
    b. Make edges of cuts perpendicular to concrete surface.
    c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
    d. Fill and compact with patching mortar before bonding agent has dried.
    e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.
    a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.
    b. Compact mortar in place and strike off slightly higher than surrounding surface.
3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces:

1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.
    a. Correct low and high areas.
    b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
3. After concrete has cured at least 14 days, correct high areas by grinding.
4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.
    a. Finish repaired areas to blend into adjacent concrete.
5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.
    a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
    b. Feather edges to match adjacent floor elevations.
6. Correct other low areas scheduled to remain exposed with repair topping.
    a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
    b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.
    a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
    b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
    c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
    d. Place, compact, and finish to blend with adjacent finished concrete.
    e. Cure in same manner as adjacent concrete.
8. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.
    a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
    b. Dampen cleaned concrete surfaces and apply bonding agent.
    c. Place patching mortar before bonding agent has dried.
    d. Compact patching mortar and finish to match adjacent concrete.
    e. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.

B. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.

2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.

3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.

a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:

1) Project name.

2) Name of testing agency.

3) Names and certification numbers of field and laboratory technicians performing inspections and testing.

4) Name of concrete manufacturer.

5) Date and time of inspection, sampling, and field testing.

6) Date and time of concrete placement.

7) Location in Work of concrete represented by samples.

8) Date and time sample was obtained.

9) Truck and batch ticket numbers.

10) Design compressive strength at 28 days.

11) Concrete mixture designation, proportions, and materials.

12) Field test results.

13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.

14) Type of fracture and compressive break strengths at seven days and 28 days.

C. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

D. Inspections:

1. Headed bolts and studs.

2. Verification of use of required design mixture.

3. Concrete placement, including conveying and depositing.

4. Curing procedures and maintenance of curing temperature.

E. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172/C 172M shall be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C143/C143M:
    a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
    b. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C231/C231M pressure method, for normal-weight concrete;.
    a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C1064/C1064M:
    a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C31/C31M:
    a. Cast and laboratory cure two sets of two 6-inch by 12-inch cylinder specimens for each composite sample. If using 4-inch by 8-inch cylinders, two sets of three cylinders shall be used.
6. Compressive-Strength Tests: ASTM C39/C39M.
    a. Test one set of two laboratory-cured specimens at seven days and one set of two specimens at 28 days. If using four-inch cylinders, tests shall include three specimens.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated. If using four-inch cylinders, average will be computed from a set of three specimens.
7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 10 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.
9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
10. Additional Tests:

a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42/C42M or by other methods as directed by Architect.

1) Acceptance criteria for concrete strength shall be in accordance with ACI 301 section 1.6.6.3.

11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

F. Measure floor and slab flatness and levelness in accordance with ASTM E1155 within 24 hours of completion of floor finishing and promptly report test results to Architect.

3.15 PROTECTION

A. Protect concrete surfaces as follows:

1. Protect from petroleum stains.
2. Diaper hydraulic equipment used over concrete surfaces.
3. Prohibit vehicles from interior concrete slabs.
4. Prohibit use of pipe-cutting machinery over concrete surfaces.
5. Prohibit placement of steel items on concrete surfaces.
6. Prohibit use of acids or acidic detergents over concrete surfaces.
7. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using Floor Slab Protective Covering.

END OF SECTION

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SECTION 03 35 11
CONCRETE FLOOR FINISHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete Floor Finishes.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in Place Concrete.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all Work with concrete floor placement, curing.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Manufacturer's thoroughly detailed Product Data, particular to this Project including all information on compatibility of different Products and any limitations.

C. Maintenance Data: Provide thoroughly detailed data, particlar to this Project, maintenance and renewal of all Work, this Section.

D. Warranty Documentation: Provide Manufacturer's (20) Year Warranty, all Work, this Section. Ensure all Forms have been completed within Owner's name and registered with Manufacturer.

1.05 QUALITY ASSURANCE

A. For those slabs indicated to receive concrete polishing system, **do not** proceed with concrete polishing unless Manufacturer's representative and specialized equipment is present for every day of placement.

1.06 MOCK UP

A. For coatings, construct mock up area under conditions similar to those that will exist during application, with coatings applied.

B. Mock up Size: (12) Twelve feet square

C. Location, as directed by Architect

D. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.07 DELIVERY, STORAGE, HANDLING

A. Deliver all materials within Manufacturer's sealed packaging, including written application instructions.

1.08 FIELD CONDITIONS

A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.

B. **Do not** finish floors until Mechanical Systems are fully operational.

C. Maintain ambient temperature of (65) Sixty Five degrees Fahrenheit, minimum.

1.09 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Replace all defective Work.

C. Manufacturer Warranty: Provide (20) Twenty year Manufacturer Warranty, to commence upon previously established Project Substantial Completion Date.

D. Installer Warranty: Provide (15) Fifteen year Installer Warranty, to commence upon previously established Project Substantial Completion Date.

PART 2 PRODUCTS

2.01 CONCRETE FLOOR FINISH, APPLICATIONS

A. Unless otherwise indicated, all concrete floors are to be finished using liquid densifier/hardener.

B. Troweling Aid, Densifier and Curing Agent:

C. Liquid Densifier and Hardener:

D. Dry Shake Hardener:

E. Concrete Stain:

F. Color Coatings:

G. Penetrating Clear Sealer:

H. Clear Coating:

I. Slip Resistant Coating:

J. Polished Finish:

2.02 SURFACE TREATMENTS

A. Troweling Aid, Densifier and Curing Agent: Liquid reactive colloidal silica based topical treatment, spray applied to wet concrete and floated troweled into surface.
   1. Product:
      a. Forta Corporation: www.forta-ferro.com
      b. Penetron: www.penetron.com.
      c. Solomon Colors: www.solomoncolors.com.
      d. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

2.03 DENSIFIERS, HARDENERS

A. Liquid Densifier and Hardener: Penetrating chemical compound that reacts with concrete, filling the pores, hardening, and dustproofing.
   1. Composition: Lithium silicate.
   2. Products:
      a. Adhesives Technology Corporation; CONVERGENT Pentra-Pel (SI): www.atcepoxy.com.
      b. Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
      c. Concrete Sealers USA: www.concretesealersusa.com.
      d. Dayton Superior Corporation: www.daytonsuperior.com.
      e. Euclid Chemical Company; ULTRASIL LI+: www.euclidchemical.com.
      f. Green Umbrella Architectural Concrete Systems; DryShield: www.greenumbrellasystems.com.
      g. Green Umbrella Architectural Concrete Systems; Shield and Enhance: www.greenumbrellasystems.com.
      h. Hi-Tech Systems; ConDense LS: www.hitechpolyurea.com.
      i. Kaufman Products Inc; SureHard LS: www.kaufmanproducts.com.
      j. L&M Construction Chemicals, Inc; LiON HARD: www.lmcc.com.
      k. Master Builders Solutions: www.master-builders-solutions.com/en-us.com.
      l. PROSOCO, Inc; Consolideck LS/CS: www.prosoco.com/consolideck.com
      m. PROSOCO, Inc; Consolideck LS: www.prosoco.com/consolideck.com.
      n. PROSOCO, Inc; ColorHard used with Consolideck LS or LS/CS: www.prosoco.com/consolideck.com
      o. Sinak Corporation; LithoHard: www.sinak.com.
      p. SpecChem, LLC; LithSeal SC: www.specchemllc.com.
      q. W. R. Meadows, Inc; Liqui-Hard Ultra: www.wrmeadows.com.
      r. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

3. Composition: Sodium silicate.
    a. Products:
        1) Concrete Sealers USA: www.concretesealersusa.com.
        2) Curecrete Distribution, Inc; Ashford Formula: www.curecrete.com.
        3) Euclid Chemical Company; EUCOSIL: www.euclidchemical.com.
        4) Euclid Chemical Company; EUCO DIAMOND HARD: www.euclidchemical.com.
        5) FullForce Solutions; DuraForce(t): www.fullforcesolutions.us/duraforce.com.
        6) Hi-Tech Systems; ConDense SS: www.hitechpolyurea.com.
        7) Kaufman Products Inc; Silicure: www.kaufmanproducts.com.
        8) Kaufman Products Inc; SureHard: www.kaufmanproducts.com.
        9) L&M Construction Chemicals, Inc; SEAL HARD: www.lmcc.com.
        10) Mapei Corporation; Mapecrete Hard SB: www.mapei.com.
        11) Master Builders Solutions: www.master-builders-solutions.com.
        12) Nox-Crete Inc; Duro-Nox: www.nox-crete.com.
        13) SINAK Corporation: www.sinak.com.
        14) SpecChem, LLC; Cure Hard: www.specchemllc.com.
        15) SpecChem, LLC; SpecHard: www.specchemllc.com.
        16) W. R. Meadows, Inc; Med-Cure: www.wrmeadows.com.
        17) W. R. Meadows, Inc; Liqui-Hard: www.wrmeadows.com.
        18) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
4. Composition: Collodial silica.
    a. Products:
        1) Solomon Colors; Lythic Densifier: www.solomoncolors.com.
        2) Solomon Colors; Lythic Densifier XL: www.solomoncolors.com.
        3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
5. Composition: Hybrid silicate.
    a. Products:
        1) Ameripolish, Inc; 3D HS Hybrid Silicate Densifier: www.ameripolish.com.
        2) Nox-Crete Inc; Duro-Nox HSC: www.nox-crete.com.
        3) Nox-Crete Inc; Duro-Nox HS: www.nox-crete.com.
        4) Hi-Tech Systems; ConDense HS: www.hitechpolyurea.com.
        5) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
6. Composition: Lithium polysilicate, pre catalyzed.
    a. Products:
        1) SINAK Corporation: www.sinak.com.
        2) Mapei Corporation; Mapecrete Hard LI: www.mapei.com.
        3) Substitutions: Reference 01 60 00 - Product Requirements fo additional Content.

B. Dry Shake Hardener: Premixed dry powder for spreading on and working into concrete surface prior to set.
    1. Colors: As selected by Architect from Manufacturer's full range of options.
    2. Composition: No metallic aggregate.
        a. Products:
            1) Dayton Superior Corporation: www.daytonsuperior.com.
            2) Euclid Chemical Company; SURFLEX: www.euclidchemical.com.
            3) Euclid Chemical Company; SURFLEX TR: www.euclidchemical.com.
            4) Kaufman Products Inc; Tycron: www.kaufmanproducts.com.
            5) L.M. Scofield Company; Emerchrome SC Color Hardener: www.scofield.com.
            6) L.M. Scofield Company; LITHOCHROME Color Hardener: www.scofield.com.
            7) Master Builders Solutions: www.master-builders-solutions.com.

8) Substitutions: Reference Sectio 01 60 00 - Product Requirements for additional Content.

3. Composition: Non oxidizing metallic aggregate.
   a. Products:
      1) Dayton Superior Corporation: www.daytonsuperior.com.
      2) Euclid Chemical Company; DIAMOND PLATE: www.euclidchemical.com.
      3) Kaufman Products Inc; Tycron Met NR: www.kaufmanproducts.com.
      4) Master Builders Solutions: www.master-builders-solutions.com.
      5) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
4. Composition: Metallic, aluminum oxide (emery) aggregate.
   a. Products:
      1) Dayton Superior Corporation: www.daytonsuperior.com.
      2) Kaufman Products Inc; Tycron EM: www.kaufmanproducts.com.
      3) L&M Construction Chemicals, Inc; EMERYPLATE FF: www.lmcc.com.
      4) Master Builders Solutions: www.master-builders-solutions.com.
      5) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
5. Composition: Metallic, iron aggregate.
   a. Products:
      1) BRICKFORM: www.brickform.com.
      2) Dayton Superior Corporation: www.daytonsuperior.com.
      3) Euclid Chemical Company; EUCO-PLATE HD: www.euclidchemical.com.
      4) Kaufman Products Inc; Tycron Met: www.kaufmanproducts.com.
      5) Kaufman Products Inc; Tycron Met 200: www.kaufmanproducts.com.
      6) Master Builders Solutions: www.master-builders-solutions.com
      7) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 COATINGS

A. Concrete Floor Topping with Aggregate: Pre mixed blend of Portland cement, hardeners and emery/corundum.
   1. Products:
      a. Dayton Superior Corporation www.daytonsuperior.com.
      b. Euclid Chemical Company; SURFLEX E: www.euclidchemical.com.
      c. Euclid Chemical Company; EUCOFLOOR E: www.euclidchemical.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Concrete Stain or Dye: Translucent, penetrating compound for interior or exterior use; must be finished with a topical sealer.
   1. Number of Coats: Minimum (4) Four.
   2. Application:
      a. Primary Color: Spray applied.
      b. Secondary Color: Spray applied.
   3. Composition: Water based, nonreactive.
      a. Products:
         1) Ameripolish, Inc; Surelock Concrete Dye: www.ameripolish.com.
         2) BRICKFORM; BRICKFORM ARTesian Stain: www.brickform.com.
         3) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
         4) Euclid Chemical Company; STONE ESSENCE: www.euclidchemical.com.
         5) Green Umbrella Architectural Concrete Systems; NanoDye: www.greenumbrellasystems.com.
         6) PROSOCO, Inc; GemTone Stain: www.prosoco.com.

7) SureCrete Design Products: www.surecretedesign.com.
8) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

4. Composition: Sovent based, nonreactive.
   a. Products:
      1) Ameripolish, Inc; Surelock Concrete Dye: www.ameripolish.com.
      2) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
      3) Rust-Oleum Corporation; Seal-Krete High Performance Color-Shell: www.rustoleum.com.
      4) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
5. Composition: Acid based, chemically reactive.
   a. Products:
      1) BRICKFORM; BRICKFORM Blush Tone Acid Stain: www.brickform.com.
      2) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
      3) Euclid Chemical Company; STAIN-CRETE: www.euclidchemical.com.
      4) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
6. Composition: Non-volatile acid-based, chemically reactive.
   a. Products:
      1) BRICKFORM; BRICKFORM E-Stain: www.brickform.com.
      2) L.M. Scofield Company; LITHOCHROME Chemstain Classic Concrete Stain: www.scofield.com.
      3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
7. Composition: Polymer based, chemically reactive.
   a. Products:
      1) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. High Gloss Clear Coating: Transparent, nonyellowing, acrylic polymer based coating.
   1. Composition: Solvent based.
   2. Products:
      a. Clemons Concrete Coatings: www.clemonsconcretecoatings.
      b. Concrete Sealers USA: www.concretesealersusa.com.
      c. Dayton Superior Corporation: www.daytonsuperior.com.
      d. Hi-Tech Systems; ConSeal HG: www.hitechpolyurea.com.
      e. Kaufman Products Inc; Krystal ReFresh: www.kaufmanproducts.com.
      f. Kaufman Products Inc; Krystal ReFresh OTC: www.kaufmanproducts.com.
      g. Nox-Crete Inc; Stifel Series Water Repellents: www.nox-crete.com.
      h. PROSOCO, Inc; LSGuard: www.prosoco.com.
      i. SpecChem, LLC; Aqua Shine: www.specchemllc.com.
      j. W. R. Meadows, Inc; Deck-O-Grip W/B (slip resistant): www.wrmeadows.com.
      k. W. R. Meadows, Inc; Decra-Seal W/B: www.wrmeadows.com.
      l. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   3. Composition: Water based.
      a. Nonvolatile Content: 15 percent, minimum, when measured by volume.
      b. Products:
         1) BRICKFORM: www.brickform.com.
         2) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
         3) Concrete Sealers USA: www.concretesealersusa.com.
         4) Dayton Superior Corporation: www.daytonsuperior.com.
         5) Euclid Chemical Company: ULTRAGUARD: www.euclidchemical.com.

6) Kaufman Products Inc; Krystal ReFresh: www.kaufmanproducts.com.
7) Kaufman Products Inc; Krystal ReFresh OTC: www.kaufmanproducts.com.
8) LATICRETE L&M; www.lmcc.com.
9) PROSOCO, Inc; LSGuard: www.prosoco.com/consolideck.com.
10) SpecChem, LLC; Crystal Shine: www.specchemllc.com.
11) SpecChem, LLC; Deco Shine: www.specchemllc.com.
12) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Low Gloss Clear Coating: Transparent, nonyellowing, acrylic polymer based coating.
1. Composition: Solvent-based.
2. Products:
a. Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
3. Composition: Water based.
a. Nonvolatile Content: 20 percent, minimum, when measured by volume.
b. Products:
1) Concrete Sealers USA; TS202: www.concretesealersusa.com.
2) Concrete Sealers USA; TS210: www.concretesealersusa.com.
3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Color Coating: Pigmented coating recommended by Manufacturer for finishing concrete floors and slabs.
1. Gloss: As selected by Architect from Manufacuturer's full range of options.
2. Color(s): As selected by Architect from Manufacturer's full range of options.
3. Type: Polyaspartic; two component, fast curing.
a. Products:
1) ARDEX Engineered Cements: www.ardexamericas.com.
2) HP Spartacote, Inc: www.hpspartacote.com.
3) Master Builders Solutions; www.master-builders-solutions.com.
4) Quantum Chemical, a division of Quantum Technical Services, Ltd; PRECIDIUM LS1150D RFS: www.quantumchemical.com.
5) Sika Corporation; Sikafloor 510N LPL: www.sikausa.com.
6) Substitutions: Reference Section 01 60 00 - Product Requirements for additioal Content.
4. Type: High solids acrylic; one component; fast curing.
a. Products:
1) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
2) Dayton Superior Corporation: www.daytonsuperior.com.
3) Euclid Chemical Company; CONCRETE STAIN SEALER: www.euclidchemical.com.
4) SpecChem, LLC; Surface Shine Gray: www.specchemllc.com.
5. Type: High solids epoxy; two component.
a. Products:
1) Allied Construction Technologies, Inc www.actechperforms.com.
2) ARDEX Engineered Cements:www.ardexamericas.com.
3) Euclid Chemical Company; DURALTEX: www.euclidchemical.com.
4) Kaufman Products Inc; SurePoxy Protective Coating WD: www.kaufmanproducts.com.
5) Kaufman Products Inc; K PRO CRS: www.kaufmanproducts.com.
6) Master Builders Solutions: www.master-builders-solutions.com/en-us.com.
7) SureCrete Design Products: www.surecretedesign.com.

8) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

6. Type: High solids aliphatic polyurethane; one or two comonent.
   a. Products:
      1) ARDEX Engineered Cements: www.ardexamericas.com.
      2) Dayton Superior Corporation: www.daytonsuperior.com.
      3) Euclid Chemical Company; EUCOTHANE: www.euclidchemical.com.
      4) Master Builders Solutions: www.master-builders-solutions.com/en-us.com.
      5) Nox-Crete Inc; Acryl-Pen: www.nox-crete.com.
      6) SureCrete Design Product: www.surecretedesign.com.
      7) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
7. Type: Solvent based penetrating silane; two component.
   a. Products:
      1) Dayton Superior Corporation: www.daytonsuperior.com.
      2) Master Builders Solutions: www.master-builders-solutions.com/en-us.com.
      3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Clear Coating: Clear coatin, as recommended by Manufacturer for finishing of concrete floors and slabs, this particular Project.
   1. Gloss: As selected by Architect from Manufacturer's full range of options.
   2. Color(s): As selected by Architect from Manufacturer's full range of options.
   3. Type: High solids epoxy; two component.
      a. Products:
         1) SureCrete Design Products: www.surecretedesign.com.
         2) Substitutions: Reference Section 01 60 00 - Product Requirements fo additional Content.
   4. Type: High solids polyurethane; two component.
      a. Products:
         1) SureCrete Design Products: www.surecretedesign.com.
         2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   5. Type: Membrane forming, lithium water based, clear liquid coating for application to newly placed concrete.
      a. Products:
         1) Adhesives Technology Corporation; CONVERGENT Pentra-Finish (HG): www.atcepoxy.com.
         2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Clear, Penetrating, Moisture Vapor Resistant Coating: Vapor resistant and pH reducing coating recommended by Manufacturer for new and existing concrete floors and slabs.
   1. Type: High solids epoxy; two component.
   2. Products:
      a. LATICRETE International, Inc; Vapor Ban E: www.laticrete.com.
      b. Rust-Oleum Corporation; TVB 100% Solids Topside Vapor Barrier: www.rustoleum.com.
      c. Rust-Oleum Corporation; TVB Water Based Topside Vapor Barrier: www.rustoleum.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements fo additional Content.

H. Penetrating Sealer: Transparent, nonyellowing, water- or solvent-based coating.
   1. Composition: Siloxane.

a. Products:
    1) Concrete Sealers USA: www.concretesealersusa.com.
    2) SureCrete Design Products: www.surecretedesign.com.
    3) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
2. Composition: Silane.
    a. Products:
        1) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
        2) Concrete Sealers USA: www.concretesealersusa.com.
3. Composition: Silane siloxane mixture.
    a. Products:
        1) Clemons Concrete Coatings: www.clemonsconcretecoatings.com.
        2) Concrete Sealers USA; www.concretesealersusa.com.
        3) Hi-Tech Systems; ConSeal PS: www.hitechpolyurea.com.
        4) TK Products Construction Coatings:: www.surecretedesign.com.
        5) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content
4. Composition: Siliconate.
    a. Products:
        1) Concrete Sealers USA: www.concretesealersusa.com.
        2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
5. Composition: Fluorinated.
    a. Products:
        1) Concrete Sealers USA: www.concretesealersusa.com.
        2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
6. Composition: Silane acrylic mixture.
7. Products:
    a. Nox-Crete Inc; Tri-Shield: www.nox-crete.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
8. Composition: Nonresinous, hybrid colloidal polymer.
    a. Products:
        1) Green Umbrella Architectural Concrete Systems; Interior Microfilm: www.greenumbrellasystems.com.
        2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
9. Composition: Lithium silicate.
    a. Products:
        1) Adhesives Technology Corporation; CONVERGENT Pentra-Guard (EXT): www.atcepoxy.com.
        2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
10. Composition:
    a. Products:
        1) Ameripolish, Inc; 3D SP Concrete Sealer: www.ameripolish.com.
        2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Plastic Aggregate: Finely ground polymer for addition to coatings for slip resistance.
    1. Products:
        a. Dayton Superior Corporation www.daytonsuperior.com.
        b. Euclid Chemical Company; EUCO GRIP: www.euclidchemical.com.

c. SpecChem, LLC; Surface Grip: www.specchemllc.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

J. Natural Aggregate: Finely ground stone for addition to coatings for slip resistance.
1. Products:
a. Dayton Superior Corporation: www.daytonsuperior.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all existing conditions are acceptable and prepared to receive Work, this Section.

B. Confirm all flaws within existing conditions have been fully repaired and all joints filled with only those methods, materials suitable for further, additional finishes.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

3.02 GENERAL

A. Apply all Work, this Section, in full accordance with Manufacturer's instructions.

3.03 COATING, APPLICATION

A. **Verify all** surfaces are free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts or residues from cleaning agents, and other impediments to adhesion.

B. **Confirm all** water vapor emissions from concrete and relative humidity within same, are within those limits previously established by Contract Documents.

C. **Protect all** adjacent non coated areas from any drips, overflow or overspray. Immediately remove any excess material.

D. **Apply all** coatings in full accordance with Mafacturer's instructions, while matching previously approved mock ups for construction, color, special effects, sealing, finish, texture and workmanship.

END OF SECTION

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SECTION 04 20 00

UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete Masonry Units.

B. Clay Facing Brick.

C. Mortar and Grout.

D. Reinforcement and Anchorage.

E. Flashings.

F. Lintels

G. Accessories.

1.02 RELATED REQUIREMENTS

A. Section 04 72 00 - Cast Stone Masonry.

B. Section 05 50 00 - Metal Fabrications: Loose steel lintels.

C. Section 06 10 00 - Rough Carpentry: Nailing strips built into masonry.

D. Section 07 21 00 - Thermal Insulation: Insulation for cavity spaces.

E. Section 07 25 00 - Weather Barriers: Water-resistive barriers or air barriers applied to the exterior face of the backing sheathing or masonry.

F. Section 07 62 00 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.

G. Section 07 84 00 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.

H. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

B. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.

D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2022.

E. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.

F. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2023.

G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2022.

H. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units 2022.

I. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units 2022.

J. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2018.

K. ASTM C150/C150M - Standard Specification for Portland Cement 2022.

L. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2018.

M. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2019a, with Editorial Revision.

N. ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2018.

O. ASTM C476 - Standard Specification for Grout for Masonry 2023.

P. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.

Q. ASTM C1072 - Standard Test Methods for Measurement of Masonry Flexural Bond Strength 2022.

R. ASTM C1148 - Standard Test Method for Measuring the Drying Shrinkage of Masonry Mortar 1992a (Reapproved 2014).

S. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms 2023.

T. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry 2020.

U. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2022.

V. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting (15) Fifteen Calendar days prior to beginning any Work, this Section. Require mandatory attendance by all relevant installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for brickwork support system.

1. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevation of reinforced walls.

D. Samples: Submit six samples of each facing brick unit to illustrate color, texture, and extremes of color range.

E. Qualification Data: For testing agency.

F. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.

G. Material Certificates: For each type and size of the following:

1. Masonry units.

a. Include data on material properties.

b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.

c. Cementitious materials. Include name of manufacturer, brand name, and type.

d. Mortar admixtures.

e. Grout mixes. Include description of type and proportions of ingredients.

f. Reinforcing bars.

g. Joint reinforcement.

h. Anchors, ties, and metal accessories.

H. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.

I. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE6.

J. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

K. Test Reports: Concrete masonry manufacturer's test reports for units with integral water repellent admixture.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM C 1093 for testing indicated.

B. Comply with provisions of TMS 402/602 except where exceeded by requirements of the contract documents.

C. Fire Rated Assemblies: Comply with applicable code for requirements of the indicated rating.

D. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

E. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.07 MOCK UP

A. Construct mock up panel sized 8 feet long by 6 feet high; include samples of all mortar and accessories, structural backup, wall openings, flashings, wall insulation, and parging.

B. Mock up shall be provided minimum four weeks prior to start of any Work, this Section.

C. Locate as directed by Architect.

D. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.08 DELIVERY, STORAGE, HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

B. Store brick and concrete masonry units off ground to prevent contamination by mud, dust or materials likely to cause staining or other defects.

C. If units are not stored in an enclosed location, cover materials to protect form elements. If units become wet, do not install until they are dry.

D. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.

E. Cover materials when necessary to protect form elements.

F. Protect reinforcement from elements.

1.09 JOB CONDITIONS

A. Protection of Work:

1. Wall Covering:

a. During erection, cover top of wall with strong waterproof membrane at end of each day or shutdown.

b. Cover partially completed walls when work is not in progress.

c. Extend cover minimum of 24 inches down both sides.

d. Hold cover securely in place.

2. Load Application:

a. Do not apply uniform floor or roof loading for at least 12 hours after building masonry columns or walls.

b. Do not apply concentrated loads for at least 3 days after building masonry columns or walls.

3. Staining:

a. Prevent grout or mortar from staining the face of masonry to be left exposed or painted:

1) Remove immediately grout or mortar in contact with face of such masonry.

2) Protect all sills, ledges and projections from droppings of mortar, protect door jambs and corners from damage during construction.

4. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

a. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

5. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Performance Requirements:

1. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.

a. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602/ACI 530.1/ASCE 6.

B. Concrete Block: Comply with referenced standards and as follows:

1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2800 psi

2. Density Classification: Normal weight.

3. Size: Standard units with nominal face dimensions of 16 inches wide x 8 inches tall and nominal depths as indicated on the drawings for specific locations (manufactured to dimensions 3/8 inch less than nominal dimensions). At exposed corners and door jambs, use a bullnose edge.

4. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
    a. Provide bullnose units for outside corners.
5. Load-Bearing Units: ASTM C90, normal weight.
    a. Hollow block, as indicated.
    b. Exposed faces: Manufacturer's standard color and texture where indicated unless indicated otherwise.
    c. Exposed faces: Refer to drawings for special colors, textures and locations.
6. Non-Loadbearing Units: ASTM C129.
7. Manufacturer:
    a. Water Table Units: Hebron, Modular, Wire Cut, Sea Gray #6 (Midwest Block & Brick).
    b. Cast Stone Units: Buckskin (Caliber Cast Stone).
8. Units with Integral Water Repellent: Concrete block units as specified in this section with polymeric liquid admixture added to concrete masonry units at the time of manufacture.
    a. Performance of Units with Integral Water Repellent:
        1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
            (a) No water visible on back of wall above flashing at the end of 24 hours.
            (b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
            (c) No more than 25 percent of wall area above flashing visibly damp at end of test.
        2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
        3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
        4) Drying Shrinkage: ASTM C1148; maximum 5 percent increase in shrinkage.
    b. Use only in combination with mortar that also has integral water repellent admixture.
    c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.

2.02 BRICK UNITS

A. Manufacturer:
1. Main Field Brick: Summit, Modular, 153 Sunset Red (Richards Brick). Selection pending approval of color samples by Architect.
2. Soldier Course: Summit, Modular, 154 Cedar Ridge (Richards Brick). Selection pending approval of color samples by Architect.

2.03 MORTAR, GROUT MATERIALS

A. Portland Cement: ASTM C150/C150M
   1. Type I or II; color as required to produce approved color sample.
   2. Not more than 0.60 percent alkali.

B. Hydrated Lime: ASTM C207, Type S.

C. Masonry Cement: ASTM C91.

D. Mortar Cement: ASTM C1329.

E. Mortar Aggregate: ASTM C144 free of delirious material, including but not limited to lignite.

F. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.

G. Grout Aggregate: ASTM C404.

H. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979.
   1. Color(s): As selected by Architect from manufacturer's full range.
   2. Manufacturers:
      a. Davis Colors: www.daviscolors.com.
      b. Solomon Colors: www.solomoncolors.com.
      c. Substitutions: See Section 01 60 00 - Product Requirements.

I. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

J. Water: Clean and potable.

K. Integral Water Repellent Admixture for Mortar: Polymeric liquid admixture added to mortar at the time of manufacture.
   1. Use only in combination with masonry units manufactured with integral water repellent admixture.
   2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
   3. Meet or exceed performance specified for water repellent admixture used in masonry units.

2.04 REINFORCEMENT AND ANCHORAGE

A. Manufacturers of Joint Reinforcement and Anchors:
   1. Blok-Lok Limited: www.blok-lok.com.
   2. Hohmann & Barnard, Inc (including Dur-O-Wal brand): www.h-b.com.
   3. WIRE-BOND: www.wirebond.com/#sle.
   4. Substitutions: See Section 01 60 00 - Product Requirements.

B. Uncoated-Steel Reinforcing Bars: ASTM A615 or ASTM A996, Grade 60 (60,000 psi), deformed billet bars.

C. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inchsteel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

D. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi), deformed billet bars;

galvanized.

E. Masonry-Joint Reinforcement, General: ASTM A 951/A 951M.
   1. Interior Walls: Hot-dip galvanized carbon steel.
   2. Exterior Walls: Hot-dip galvanized carbon steel.
   3. Wire Size for Side Rods: 0.148-inch diameter.
   4. Wire Size for Cross Rods: 0.148-inch diameter.
   5. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
   6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

F. Single Wythe Joint Reinforcement: Ladder type; ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.

G. Adjustable Multiple Wythe Joint Reinforcement: Truss type with adjustable ties or tabs spaced at 16 in on center and fabricated with moisture drip; ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.
   1. Vertical adjustment: Not less than 2 inches.
   2. Seismic Feature: Provide lip, hook, or clip on extended leg of wall ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.
   3. Insulation Clips: Provide clips at tabs or ties designed to secure insulation against outer face of inner wythe of masonry.

H. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.
   1. Concrete frame: Dovetail anchors of bent steel strap, nominal 1 inch width x 0.024 in thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
   2. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.

I. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
   1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners. Provide strip flashing behind anchor plate which will self seal, is approved by weather barrier manufacturer and maintain integrity of air barrier specified in section 07 25 00 - Weather Barriers when installed.
   2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
   3. Vertical adjustment: Not less than 3-1/2 inches.
   4. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.

2.05 FLASHINGS

A. Rubberized Asphalt Flashing: Self-adhering polymer-modified asphalt sheet; 0.025 inch total thickness; with cross-linked polyethylene top and bottom surfaces. Utilize pre-formed corners, end dams and termination bars with sealant on the inner face of construction.

1. Manufacturers:

a. Dur-O-Wall; Product DA1540.

b. Hohman and Barnard; Product Textroflash Flashing.

c. Grace Construction Products; Product Perm-a-Barrier.

d. Substitutions: See Section 01 60 00 - Product Requirements.

B. Flashing System: System is for all heads, sills, shelf angles, spandrels, lintels, thru-wall conditions and other locations indicated on the drawings. System shall consist of a self-adhered rubberized asphalt laminate flashing material, self-adhered pre-formed flashing corners and end dams, stainless steel drip edge, and termination bar. Lap joints a minimum of six inches were required.

C. Factory-Fabricated Flashing Corners and End Dams: Stainless steel.

1. Manufacturers:

a. Mortar Net Solutions; CompleteFlash: www.mortarnet.com/#sle.

b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Stainless Steel Flashing: ASTM A 666, Type 304, soft temper; 26 gage (0.45 mm) thick; finish 2B to 2D. Utilize pre-welded interior and exterior corners and at exterior corners provide a blunt edge. Stainless Steel is to be used to form visible edge of concealed flashing.

1. Manufacturers:

a. Dur-O-Wall; Product DA 1545.

b. Illinois Product Corporation: Product IPCO Drip Edge.

E. Lap Sealant: Butyl type as specified in Section 07 90 05.

2.06 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.

1. Manufacturers:

a. Hohmann & Barnard, Inc (including Dur-O-Wal brand): www.h-b.com.

b. WIRE-BOND: www.wirebond.com/#sle.

c. Substitutions: See Section 01 60 00 - Product Requirements.

B. Joint Filler: Closed cell rubber; oversized 50 percent to joint width; self expanding; 3 inch wide x by maximum lengths available.

1. Manufacturers:

a. Dur-O-Wal: www.dur-o-wal.com.

b. Hohmann & Barnard, Inc (including Dur -O-Wal brand): www.h-b.com.

c. WIRE-BOND: www.wirebond.com/#sle.

d. Substitutions: See Section 01 60 00 - Product Requirements.

C. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.

1. Mortar Diverter: Panels designed for installation at flashing locations and fill the depth of the cavity.
    a. Manufacturers:
        1) Mortar Net USA, Ltd: www.mortarnet.com.
        2) Substitutions: See Section 01 60 00 - Product Requirements.

D. Weeps:
1. Type: Polyester mesh.

E. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials. Special attention is to be paid to stainless steel flashing to make sure cleaning solution is completely removed and flashing left in like new condition.
1. Manufacturers:
    a. EaCo Chem; Product NMD 80: www.eacochem.com
    b. Prosoco; Product 600 Detergent: www.prosoco.com
    c. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 LINTELS

A. Miscellaneous steel lintels as indicated on structural drawings or Section 05 50 00 - Metal Fabrications. Minimum bearing of 8 inches on each side of opening.

2.08 MORTAR AND GROUT MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
2. Use portland cement-lime mortar unless otherwise indicated.
3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.

C. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
1. Masonry below grade and in contact with earth: Type M.
2. For reinforced masonry, use Type S.
3. For mortar parge coats, use Type S.
4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
5. For interior nonload-bearing partitions, Type O may be used instead of Type N.

D. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

E. Grout: ASTM C476
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
2. Proportion grout in accordance with ASTM C 476.

3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143/C 143M.

F. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

G. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

H. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:

1. Bond: Running. Do not use units with less-than-nominal 4 inch horizontal face dimensions at corners or joints.
2. Coursing: One unit and one mortar joint to equal 8 inches.
3. Mortar Joints: Concave.

D. Brick Units:

1. Bond: Running.
2. Coursing: Three units and three mortar joints to equal 8 inches.
3. Mortar Joints: Concave.

3.05 PLACING AND BONDING

A. Mix clay units from multiple cubes when supplying the mason.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. Remove excess mortar and mortar smears as work progresses.

E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.

F. Interlock intersections and external corners.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

I. Broken, chipped, or stained masonry units will not be acceptable.

J. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

K. Do not parge openings between veneer and back up material. This area to be filled as noted in Section 07 90 00 - Joint Sealers.

L. Build non-load bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.

1. Fasten partition to structure above as indicated.

M. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.

1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.

2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.

N. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.

O. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

2. Limit height of vertical grout pours to not more than 60 inches.

3.06 WEEPS/CAVITY VENTS

A. Install weeps in veneer walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

3.07 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.

C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.08 REINFORCEMENT AND ANCHORAGE - GENERAL

A. Masonry-Joint Reinforcement:

1. Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere.

2. Unless otherwise indicated on drawings or specified under specific wall type, install continuous horizontal joint reinforcement 16 inches on center.

3. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

4. Place continuous joint reinforcement in first and second joint below top of walls.
5. Lap joint reinforcement ends minimum 6 inches.
6. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
7. Provide continuity at wall intersections by using prefabricated T-shaped units. Provide continuity at corners by using prefabricated L-shaped units.

B. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.09 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

3.10 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

A. Install horizontal joint reinforcement 8 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 36 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

F. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

G. Seismic Reinforcement: Connect veneer anchors with continuous horizontal wire reinforcement before embedding anchors in mortar.

3.11 REINFORCEMENT AND ANCHORAGES - CAVITY WALL MASONRY

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of openings.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.12 REINFORCEMENT AND ANCHORAGES - MULTIPLE WYTHE UNIT MASONRY

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.

3.13 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.

1. Extend flashings full width at such interruptions and at least 6 inches into adjacent masonry or turn up at least 8 inches to form watertight pan at non-masonry construction.
2. Remove or cover protrusions or sharp edges that could puncture flashings.
3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.

C. Extend flashings to within 1/4 inch of exterior face of masonry.

D. Lap end joints of flashings at least 6 inches and seal watertight with mastic or elastic sealant.

E. Provide end dams at all locations where flashing terminates into different materials or changes direction.

3.14 LINTELS

A. Install loose steel lintels over openings.

B. Provide masonry lintels where shown and where openings of more than 12 inches (305 mm) for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.

C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.15 GROUTED COMPONENTS

A. Lap splices minimum 24 bar diameters.

B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

C. Place and consolidate grout fill without displacing reinforcing.

D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

E. Fill masonry cores with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.16 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.

C. Size control joints as indicated on drawings; if not shown, 3/4 inch wide and deep.

D. Size control joint in accordance with Section 07 92 00 for sealant performance.

E. Form expansion joint as detailed on drawings.

F. Locate joints at distances indicated on drawings but not more than 30 feet on center. Contact Architect for exact locations.

3.17 BUILT-IN WORK

A. As work progresses, install built-in metal door frames, glazed frames, fabricated metal frames, window frames, anchor bolts, and plates and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout. Verify that frame has bituminous coating and is prepared for grout.

D. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

E. Do not build into masonry construction organic materials that are subject to deterioration.

3.18 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/4 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

F. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.19 CUTTING AND FITTING

A. Cut and fit for pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.20 PARGING

A. Dampen masonry walls prior to parging.

B. Scarify each parging coat to ensure full bond to subsequent coat.

C. Strike top edge of parging at 45 degrees.

3.21 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5.

1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
3. Place grout only after inspectors have verified proportions of site-prepared grout.

C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.

D. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.

E. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test

mortar for mortar air content and compressive strength.

F. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

G. Prism Test: For each type of construction provided, according to ASTM C 1314 at 7 days and at 28 days.

3.22 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

3.23 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION

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SECTION 04 26 00
SINGLE WYTHE UNIT MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single Wythe Unit Masonry.

1.02 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY ".

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

B. ASTM A580/A580M - Standard Specification for Stainless Steel Wire.

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

D. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process.

F. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

G. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement.

H. ASTM A1064/A1064M - Standard Specification for Carbon Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

I. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction.

J. ASTM C55 - Standard Specification for Concrete Building Brick.

K. ASTM C56 - Standard Specification for Structural Clay Nonloadbearing Tile.

L. ASTM C90 - Standard Specification for Dry Cast Loadbearing Concrete Masonry Units.

M. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units.

N. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

O. ASTM C530 - Standard Specification for Structural Clay Nonloadbearing Screen Tile; 2023.

P. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units.

Q. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

R. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single Ply Roof Membrane.

S. BIA Technical Notes No. 28B - Brick Veneer/Cold Formed Steel Framed Walls.

T. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing.

U. BIA Technical Notes No. 46 - Maintenance of Brick Masonry.

V. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures.

W. UL (FRD) - Fire Resistance Directory.

1.03 ADMINISTRATIVE REQUIREMENTS

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide thoroughly detailed Product Data, all Work, this Section.

C. Mix Designs: For each type mortar, grout. Include description of type and proportions of ingredients.
   1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91 for air content.
   2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

E. Cold Weather, Hot Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

F. Samples: Provide (2) Two Product Samples, Manufacturer's standard sized, as required to accurately represent construction, color finish, sheen and texture.

G. Thoroughly detailed Shop Drawings, particular to this Project:
   1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
   2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Fully comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
   3. Fabricated Flashing: Detail corner units, end dam units, and other special applications.

1.05 QUALITY ASSURANCE

A. Fully comply with all provisions of TMS 402/602.

B. Manufacturer Qualifications: Company specializing in manufacturing Work, this Section, minimum (20) Twenty Years documented experience.

C. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.

D. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

E. Masonry Standard: Fully comply with ACI 530.1/ASCE 6/TMS 602.

1.06 MOCK UP

A. Construct masonry wall as temporary mock up panel sized (8) Eight Feet long by (4) Four Feet High, including mortar and all accessories.

B. Locate as directed by Architect

C. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.07 DELIVERY, STORAGE, HANDLING

A. Deliver, handle, store all masonry units, only by means that will prevent Damage or Contamination.

B. Handle and store ceramic glazed masonry units and pre-faced concrete block units in protective cartons or trays. Do not remove from protective packaging until ready for installation.

C. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.

D. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use any cementitious materials that have become damp.

E. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

F. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.

G. Store all masonry accessories, including any metal items, s required to prevent any corrosion and or accumulation of dirt, oil.

1.08 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Fully comply with all requirements of TMS 402/602 or applicable building codes, whichever is more stringent.

B. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
   1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.
   2. Where one wythe of multi wythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.

C. Do not apply uniform floor or roof loads for at least (24) Twenty Four hours and concentrated loads for at least (5) Five Business days after building masonry walls or columns.

D. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
   1. Protect base of walls from rain splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
   2. Protect sills, ledges, and projections from mortar droppings.
   3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
   4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.

E. Cold Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

F. Cold Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.

G. Hot Weather Requirements: Fully comply with all hot weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 PRODUCTS

2.01 MASONRY UNITS, GENERAL

A. Masonry Standard: Fully comply with TMS 602/ACI 530.1/ASCE 6.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects will be exposed in the completed Work.

2.02 CONCRETE MASONRY UNITS

A. Concrete Block: Fully comply with all referenced standards and as follows:
   1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3,750 psi.
   2. Density Classification: Normal weight (max 135 pcf) unless otherwise indicated.
   3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
   4. Exposed Faces: Standard finish.
   5. Features:
      a. Provide standard blocks at all new locations. Where patching in existing areas is adjacent to existing units with center scores (for 8x8-inch exposed coursing pattern) is visible.
      b. Provide bullnosed corners at all exposed outside edges.
   6. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depths as indicated within Contract Documents.
   7. Special Shapes: Provide all non-standard blocks, as required by this particular Project.
   8. Load Bearing Units: ASTM C90, normal weight.
      a. Hollow block, as indicated.
      b. Exposed Faces: Color, Texture as selected by Architect from Manufacturer's full range of options.
      c. Patter: As selected by Architect from Manufacturer's full range of options.
   9. Pre Faced Units: ASTM C90, hollow block, with smooth resinous facing complying with ASTM C744.
      a. Colors and Styles: As selected by Architect from Manufacturer's full range of options.
      b. Substitutions: Reference Section 01 60 00 Product Requirements for additional Content.

2.03 MORTAR AND GROUT MATERIALS

A. Portland Cement: ASTM C 150, Type I or II. Provide natural color or white cement as required to produce mortar color as selected by Architect from Manufacturer's full range of options.

B. Hydrated Lime: ASTM C 207, Type S.

C. Mortar Cement: ASTM C 91.
   1. Products:
      a. Holman Masonry Cement.
      b. Lafarge North American, Inc.
   2. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and fully complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.
   3. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
      a. Davis Colors; True Tone Mortar Colors.
      b. Lanxess Corporation; Bayferrox Iron Oxide Pigments.
      c. Solomon Colors, Inc.; SGS Mortar Colors.
   4. Color: As selected by Architect from Manufacturer's full range of options.

D. Aggregate for Mortar: ASTM C 144.
   1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
   2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
   3. White Mortar Aggregates: Natural white sand or crushed white stone.
   4. Colored Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

E. Aggregate for Grout: ASTM C 404.

F. Cold Weather Admixture: Not allowed.

G. Water: Potable.

2.04 REINFORCEMENT, ANCHORAGE

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) yield strength, deformed billet bars; galvanized.

B. Single Wythe Joint Reinforcement: ASTM A951/A951M.
   1. Type: Ladder.
   2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.
   3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
   4. Basis-of-Design Product: Subject to compliance with requirements, provide the following:
      a. #220 Lap-Rite Ladder Mesh reinforcing: Hohmann & Barnard, Inc. or comparable product from one of the following:
         1) Dayton Superior Corporation, Dur-O-Wal Division.
         2) Wire Bond.

2.05 MASONRY LINTELS

A. Masonry Lintels: Prefabricated and or built in place masonry lintels made from bond beam CMUs including reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built in place lintels until cured. Masonry contractor is responsible for designing and supplying temporary masonry support.

2.06 FLASHINGS

A. Metal Flashing Materials:
   1. Stainless Steel Flashing: ASTM A666/A666M, Type 304, soft temper; 26 gauge, 0.0187 inch thick; finish 2B to 2D.
   2. Prefabricated Metal Flashing: Smooth fabricated 12 oz/sq ft stainless steel (type 304) flashing for surface mounted conditions.

2.07 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
   1. Manufacturers:
      a. Blok-Lok Limited: www.blok-lok.com.
      b. Hohmann & Barnard, Inc: www.h-b.com.
      c. WIRE-BOND: www.wirebond.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Flashing, Weep Type, Vent System: Polypropylene pan and bridge unit with polyester mesh drainage mats and bug guards; wall system size: 12 inch.
   1. Manufacturers:
      a. Mortar Net Solutions; BlockFlash: www.mortarnet.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Cleaning Solution: Non acidic, not harmful to masonry work or adjacent materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all conditions are acceptable and are ready to receive Work this Section.

B. Confirm all built in items are in proper location, and ready for roughing into Work, this Section

3.02 PREPARATION

A. Direct and coordinate placement of all anchors.

B. Provide temporary bracing, as required, during installation of all Work, this Section. Maintain in place until building structure provides permanent bracing.

3.03 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches.
   3. Mortar Joints: Concave.

3.04 PLACING, BONDING

A. Lay hollow masonry units with face shell bedding on head and bed joints.

B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

C. Remove excess mortar as work progresses.

D. Interlock intersections and external corners, except for units laid in stack bond.

E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

G. Cut mortar joints flush where resilient base is scheduled.

H. Isolate masonry partitions from vertical structural framing members with a control joint.

I. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.05 REINFORCEMENT, ANCHORAGE

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches.

E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches horizontally and 16 inches vertically.

F. Install anchors to structural framing at not more than 16 inches on center.

3.06 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up at least 1 inch, minimum, to form watertight pan at non-masonry construction.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Install all flashing in full accordance with manufacturer's instructions and BIA Technical Notes No. 7.

C. Extend metal flashings to within 1/2 inch of exterior face of masonry and adhere to top of stainless steel angled drip with hemmed edge.

D. Lap end joints of flashings at least (8) Eight inches, minimum, and seal watertight with flashing sealant/adhesive.

3.07 CONTROL, EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control or expansion joints.

B. Size control joints as delineated within Contract Documents; if not shown, 3/8 inch wide and deep.

C. Form expansion joints as indicated within Contract Documents.

3.08 BUILT IN WORK

A. As work progresses, install built in metal door frames and other items to be built into the work and furnished under other sections.

B. Install built in items plumb, level, and true to line.

C. Bed anchors of metal door frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

3.09 TOLERANCES

A. Maximum Variation from Alignment of Columns: 1/8 inch.

B. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

C. Maximum Variation from Plane of Wall: 1/8 inch in 10 ft and 1/2 inch in 20 ft or more.

D. Maximum Variation from Plumb: 1/8 inch per story non cumulative; 1/4 inch in two stories or more.

E. Maximum Variation from Level Coursing: 1/16 inch in 3 ft.

F. Maximum Variation of Joint Thickness: Head joint, minus 1/4 inch, plus 1/4 inch.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

3.10 CUTTING, FITTING

A. Cut and fit, as required for all chases, pipes, conduit, sleeves and miscellaneous Work, this particular Project.

B. Obtain approval from Engineer, Architect, prior to any cutting or fitting of masonry Work.

3.11 FIELD QUALITY CONTROL

A. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in full accordance with ASTM C140/C140M as required for full compliance with these Contract Documents.

3.12 CLEANING

A. Remove all excess mortar, mortar smears as Work progresses.

B. Replace any defective mortar, immediately. Match adjacent Work.

C. Thoroughly clean all Work, this Section.

D. Use only non metallic tools within cleaning operations.

3.13 PROTECTION

A. Without damaging any previously completed Work, place protective boards, all Work this Section, subject Damage.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately**.

END OF SECTION

SECTION 04 26 13
MASONRY VENEER

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Masonry Veneer.

1.02 RELATED REQUIREMENTS

A. Section 04 43 13 - Stone Masonry Veneer.

B. Section 05 40 00 - Cold-Formed Metal Framing.

C. Section 05 50 00 - Metal Fabrications.

D. Section 06 10 00 - Rough Carpentry.

E. Section 07 62 00 - Sheet Metal Flashing and Trim.

F. Section 07 92 00 - Joint Sealants.

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY"

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2026.

C. ASTM A580/A580M - Standard Specification for Stainless Steel Wire; 2023.

D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

E. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019 (Reapproved 2025).

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

G. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

H. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2022.

I. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

J. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2022.

K. ASTM C55 - Standard Specification for Dry-Cast Concrete Building Brick; 2025.

L. ASTM C67/C67M - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile; 2025.

M. ASTM C73 - Standard Specification for Calcium Silicate Brick (Sand-Lime Brick); 2023.

N. ASTM C90 - Standard Specification for Dry-Cast Loadbearing Concrete Masonry Units; 2024a.

O. ASTM C91/C91M - Standard Specification for Masonry Cement; 2025.

P. ASTM C126 - Standard Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units; 2022.

Q. ASTM C129 - Standard Specification for Dry-Cast Nonloadbearing Concrete Masonry Units; 2025.

R. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2025.

S. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

T. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2024.

U. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale); 2024.

V. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

W. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.

X. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

Y. ASTM C652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale); 2022.

Z. ASTM C744 - Standard Specification for Prefaced Concrete and Calcium Silicate Masonry Units; 2021.

AA. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2024.

BB. ASTM C1405 - Standard Specification for Glazed Brick (Single Fired, Brick Units); 2020a.

CC. ASTM C1634 - Standard Specification for Dry-Cast Concrete Facing Brick and Other Concrete Masonry Facing Units; 2025.

DD. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2025.

EE. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2015, with Editorial Revision (2022).

FF. BIA Technical Notes No. 28B - Brick Veneer/Cold-Formed Steel Framed Walls; 2025.

GG. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.

HH. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2017.

II. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

JJ. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene (2) two weeks prior to scheduled start of any Work, this Section.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar.

C. Samples: Provide multiple Product Samples, per Architect's direction, as required to accurately illustrate construction, color range and texture.

D. Manufacturer's Certificate: Certify that masonry units meet or exceed all requirements delineated within Contract Documents.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of Project.
   1. Reference Section 01 60 00 - Product Requirements, for additional Content.

1.06 QUALITY ASSURANCE

A. Fully comply with all provisions of TMS 402/602.
   1. Maintain (1) one copy, each document upon Existing Project Site.

B. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.07 MOCK UP

A. Construct masonry wall upon Existing Project Site, as mock up panel, sized 8 feet long by 6 feet high; including mortar, structural back up, flashings and all necessary accessories.

B. Locate as directed by Architect.

C. **Mock up may not remain as part of permanent Work, this particular Project.**

1.08 DELIVERY, STORAGE, HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

B. Handle and store ceramic glazed masonry units in protective cartons or trays. **Do not** remove from protective packaging until ready for installation.

1.09 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Fully comply with all requirements, TMS 402/602 or applicable Local building codes, whichever is more stringent.

B. Maintain all materials, surrounding air temperature to minimum (50) Fifty degrees Fahrenheit prior to, during and (72) Seventy Two hours, immediately following completion of all Work, this Section.

C. Maintain materials and surrounding air temperature to maximum (80) Eighty degrees Fahrenheit prior to, during and (72) Seventy Two hours, immediately following completion of all Work, this Section.

PART 2 PRODUCTS

2.01 UNIT MASONRY, GENERAL

A. Fully comply with all applicable codes and or those Local Aurhorities having Jurisdiction.

2.02 BRICK UNITS

A. Manufacturers:
   1. Endicott Clay Products Co; Face Brick: www.endicott.com.
   2. General Shale Brick: www.generalshale.com.
   3. Meridian Brick LLC: www.meridianbrick.com.
   4. Metro Brick: www.metrothinbrick.com.
   5. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
   1. Color and texture; as selected by Architect from Manufacturer's full range of options.
   2. Nominal Size: As indicated within Contract Documents.
   3. Special Shapes: Molded units as required by this particular Project, unless those units can be field manufactured, as required to produce equivalent effect.

2.03 MORTAR, GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M Type N.
   1. Product:
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Portland Cement: ASTM C150/C150M, Type I; Color as selected by Architect from Manufacturer's full range of options.

C. Hydrated Lime: ASTM C207, Type S.

D. Mortar Aggregate: ASTM C144.

E. Grout Aggregate: ASTM C404.

F. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
   1. Color(s): As selected by Architect from Manufacturer's full range of options.

2. Manufacturers:
    a. Davis Colors, a division of Venator Materials PLC: www.daviscolors.com.
    b. Lambert Corporation: www.lambertusa.com.
    c. Solomon Colors, Inc: www.solomoncolors.com.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

G. Water: **Clean and potable.**

2.04 REINFORCEMENT, ANCHORAGE

A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi) yield strength, deformed billet bars; galvanized.

B. Joint Reinforcement Type: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless directed otherwise by Architect.

C. Joint Reinforcement Standard: ASTM A951/A951M.
1. Type: Truss or ladder.
2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M Class 3.
3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
4. Manufacturers:
    a. 3GEN Masonry Products: www.3genmp.com.
    b. Blok-Lok Limited: www.blok-lok.com.
    c. Hohmann & Barnard, Inc; HB 213 Veneer Anchor: www.h-b.com.
    d. WIRE-BOND; Reinforcement and Anchorage: www.wirebond.com.
    e. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Masonry Veneer Anchors: (2) Two piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
3. Vertical adjustment: Not less than 3-1/2 inches.
4. Seismic Feature: Provide lip, hook, or clip on end of wire ties to engage or enclose not less than one continuous horizontal joint reinforcement wire of 0.1483 inch diameter.
5. Manufacturers:
    a. 3GEN Masonry Products; H-13: www.3genmp.com.
    b. Hohmann & Barnard, Inc: www.h-b.com.
    c. TruFast Walls, a division of Altenloh, Brinck & Co. US, Inc; Thermal-Grip MVA: www.trufastwalls.com.
    d. WIRE-BOND: www.wirebond.com.
    e. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Strap Anchors: Bent steel shapes, 1-1/2-inch width, 0.105-inch thickness, 24-inch length; with 1-1/2 inches long, 90-degree bend at each end to form U or Z shape or with cross pins; hot-dip galvanized in accordance with ASTM A153/A153M Class B.
1. Manufacturers:
    a. 3GEN Masonry Products; Barrel Anchor Metal: www.3genmp.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Metal to Metal Fasteners: Self drilling, self tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.
1. Manufacturers:

a. ITW Commercial Construction North America; Teks Select Series: www.ITWBuildex.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.05 FLASHINGS

A. Metal Flashing Materials:
1. Copper Flashing: ASTM B370, 060 soft annealed; 20 oz/sq ft thick; natural finish.
2. Prefabricated Metal Flashing: Smooth fabricated 12 oz/sq ft copper flashing for surface mounted conditions.
a. Manufacturers:
1) Cheney Flashing Company: www.cheneyflashing.com.
2) Hohmann & Barnard, Inc: www.h-b.com.
3) WIRE-BOND: www.wirebond.com.
4) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Combination Asphaltic Flashing Materials, Copper:
1. Copper/Asphalt Flashing: 3 oz/sq ft copper sheet coated with elastic asphalt compound on both sides.
a. Manufacturers:
1) WIRE-BOND: www.wirebond.com.
2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all field conditions are acceptable, ready to receive Work, this Section.

B. Confirm all related items provided via other Sections are properly sized and located.

C. Verify all built-in items are in proper location, and ready for roughing into Work, this Section.

3.02 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
1. Coursing: One unit and one mortar joint to equal 8 inches.
2. Mortar Joints: Concave.

D. Brick Units:
1. Bond: Running.
2. Mortar Joints: Concave.

3.03 PLACING, BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

D. **Remove all excess mortar as work progresses.**

E. Interlock intersections and external corners, except for units laid in stack bond.

F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

H. Isolate top joint of masonry veneer from horizontal structural framing members or support angles with compressible joint filler.

3.04 WEEPS, CAVITY VENTS

A. Install weeps withn veneer walls, at (24) Twenty Four inches on center horizontally, on top of through wall flashing, above shelf angles, lintels and at bottom of said walls.

B. Install cavity vents within veneer walls, at (32) Thirty Two inches on center horizontally, below shelf angles,lintels and at top of said walls. below shelf angles and lintels and at top of walls

3.05 CAVITY MORTAR CONTROL

A. **Do not permit any mortar to drop, accumulate within cavity air space or plug any weep, cavity vents.**

B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.

C. Install cavity mortar control panels continuously throughout full height of exterior masonry cavities during construction of exterior wythe, complying with manufacturer's installation instructions.
   1. Verify that airspace width is no more than 3/8 inch greater than panel thickness.
   2. Hold cavity mortar control panel tight to face wythe.
   3. Install horizontally between joint reinforcement.
   4. Stagger end joints in adjacent rows.
   5. Fit to perimeter construction and penetrations without voids.

D. Install cavity mortar diverter at base of cavity and at those other flashing locations as recommended by Manufacturer, as required to prevent mortar droppings from blocking any weep, cavity vents.

3.06 REINFORCEMENT ANCHORAGE, MASONRY VENEER

A. Install horizontal joint reinforcement 16 inches on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.

E. Lap all joint reinforcement minimum (8) Eight inches.

F. Masonry Back Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 36 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

G. Masonry Back Up: Embed anchors in masonry back-up to bond veneer at maximum 1.77 sq ft of wall surface per anchor. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

H. Stud Back Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 24 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

I. Stud back Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 1.77 sq ft of wall surface per anchor. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

J. Seismic Reinforcement: Connect veneer anchors with continuous horizontal wire reinforcement before embedding anchors in mortar.

K. Reinforce stack bonded unit joint corners and intersections with strap anchors 16 inches on center.

3.07 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing, as required to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up at least 1 inch, minimum, to form watertight pan at non masonry construction.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Terminate flashing up 8 inches minimum on vertical surface of backing:
   1. Install vertical leg of flashing behind water-resistive barrier sheet over backing.
   2. Install vertical leg of flashing over fluid-applied or self-adhered air/vapor barriers over backing or per manufacturer’s directions.
   3. Terminate vertical leg of flashing into bed joint in masonry or reglet in concrete.
   4. Anchor vertical leg of flashing into backing with a termination bar and sealant.
   5. Apply cap bead of sealant on top edge of self-adhered flashing.

C. Install all flashing in full accordance with Manufacturer's written instructions.

D. Extend metal flashings through exterior face of masonry and terminate in an angled drip with hemmed edge. Install joint sealer below drip edge to prevent moisture migration under flashing.

E. Extend metal flashings to within 1/2 inch of exterior face of masonry and adhere to top of stainless steel angled drip with hemmed edge.

F. Support flexible flashings across gaps and openings.

G. Extend all flashings to within 3/8 inch of exterior face, masonry and adhere to top of drip with continuous hemmed edge.

H. Lap all end joints, flashings at least (8) Eight inches, minimum and seal watertight with flashing sealant, adhesive.

3.08 LINTELS

A. Set all loose steel lintels at openings, this particular Project.

B. Maintain minimum (8) Eight inch bearing, each side of opening.

3.09 CONTROL, EXPANSION JOINTS

A. **Do not** continue horizontal joint reinforcement through control or expansion joints.

B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.

C. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with Manufacturer's instructions.

D. Size control joints as indicated on drawings; if not indicated, 3/8 inch wide, deep.

E. Form all expansion joints as indicated within Contract Documents

3.10 TOLERANCES

A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

E. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.

3.11 CUTTING, FITTING

A. Cut and fit, as required for all piping, conduit. Coordinate all with other Sections of Work, this particular Project as required to provide correct size, shape and locations.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.12 CLEANING

A. Thoroughly remove all excess mortar, smears as Work, this Section, progresses.

B. Replace all defective mortar, as required to match all adjacent Work.

C. Thoroughly clean all Work, this Section.

D. Use only non metallic tools within cleaning operations.

3.13 PROTECTION

A. **Protect all Work, this Section from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 04 72 00
CAST STONE MASONRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cast Stone Masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 20 00 - Unit Masonry.

B. Section 07 92 00 - Joint Sealants.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"

A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.

D. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2024.

E. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2022.

F. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2025.

G. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2022.

H. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.

I. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

J. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

K. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).

L. ASTM C642 - Standard Test Method for Density, Absorption, and Voids in Hardened Concrete; 2021.

M. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2024.

N. ASTM C1364 - Standard Specification for Architectural Cast Stone; 2025.

O. ICC-ES AC219 - Acceptance Criteria for Exterior Insulation and Finish Systems; 2009, with Editorial Revision (2022).

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Test results of cast stone components made previously by the Manufacturer.
   1. Include one copy of ASTM C1364 for Architect's use.

C. Shop Drawings: Include elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, and piece numbers.

D. Mortar Color Selection Samples.

E. Verification Samples: Pieces of actual cast stone components not less than (8) Eight inches square, illustrating range of color and texture to be anticipated in components furnished for the project.

F. Full-Size Samples, For Review:
   1. Basic Shapes: One of each.
   2. Accent, Trim and Specialty Shapes: One of each.

G. Source Quality Control Test Reports.

H. Manufacturer's Qualification Data: Documentation showing compliance with specified requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. A Firm with a minimum of (15) Fifteen years documented experience producing cast stone of those types delineated within Contract Documents, for this particular Project
   2. Current producer member of the Cast Stone Institute or the Architectural Precast Association.
   3. Manufacturer's production facility currently holds a Plant Certification from the Cast Stone Institute or the Architectural Precast Association.
   4. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least (10)Ten Years documented experience.

1.06 MOCK UPS

A. Provide only full size cast stone components within installation of mock up construction.

B. Reference Section 01 40 00 - Quality Requirements for additional Content

C. Approved mock up construction shall represent standard for appearance and workmanship of permanent Work.

D. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.07 DELIVERY, STORAGE, HANDLING

A. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.

B. Number each piece individually to match shop drawings and schedule.

C. Store cast stone components and installation materials in accordance with manufacturer's instructions.

D. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.

E. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.

F. Store mortar materials where contamination can be avoided.

G. Schedule, coordinate production, delivery of all cast stone components with unit masonry Work, as required to optimize Existing Project Site iinventory and avoid delaying any Work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Cast Stone:
   1. Any current producer member of the Architectural Precast Association.
   2. Any current producer member of the Cast Stone Institute.
   3. Substitutions: Reference Setrion 01 60 00 - Product Requirements for additional Content.

B. Architectural Synthetic Stone Units:
   1. Royal Corinthian; RoyalThinStone™: www.royalcorinthian.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 ARCHITECTURAL CAST STONE

A. Cast Stone: Architectural concrete product manufactured to simulate appearance of natural granite, fully complying with ASTM C1364.
   1. Compressive Strength: As specified in ASTM C1364; calculate strength of pieces to be field cut at 80 percent of uncut piece.
   2. Freeze-Thaw Resistance: Demonstrated by laboratory testing in accordance with ASTM C1364.
   3. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 20 feet.
   4. Color: Match existing.
   5. Colors: As selected by Architect from Manufacturer's full range of options
   6. Remove all cement film from exposed surfaces before packaging for shipment.

B. Shapes: Provide shapes indicated on drawings.
   1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch or length divided by 360, whichever is greater, but not more than 1/4 inch.
   2. Unless otherwise indicated on drawings, provide:
      a. Wash or slope of 1:12 on exterior horizontal surfaces.
      b. Drips on projecting components, wherever possible.
      c. Raised fillets at back of sills and at ends to be built in.

C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI CODE-318.
   1. Pieces More than (24) twenty four inches in Any Dimension: Provide full length two way reinforcement of cross sectional area, not less than 0.25 percent of unit cross sectional area.

2.03 ARCHITECTURAL SYNTHETIC STONE UNITS

A. Architectural Synthetic Stone Units: Factory-fabricated, high-density cementitious units made from cement, crushed stone, sand, and polymer reinforced with fiberglass strands; designed to simulate appearance of natural stone.
   1. Freeze Thaw Resistance: Demonstrated by laboratory testing in accordance with ICC-ES AC219.
   2. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 20 feet.
   3. Color: Match existing.
   4. Color: Selected by Architect from Manufacturer's full range.
   5. Remove cement film from exposed surfaces before packaging for shipment.

B. Shapes: Provide shapes indicated on drawings.
   1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch or length divided by 360, whichever is greater, but not more than 1/4 inch.
   2. Unless otherwise delineated within Contract Documents, provide:
      a. Wash or slope of 1:12 on exterior horizontal surfaces.
      b. Drips on projecting components, wherever possible.
      c. Raised fillets at back of sills and at ends to be built in.

C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI CODE-318.
   1. Pieces More than 24 inches in Any Dimension: Provide full length two way reinforcement of cross-sectional area not less than 0.25 percent of unit cross-sectional area.

2.04 MATERIALS

A. Portland Cement: ASTM C150/C150M.
   1. For Mortar: Type I or II, except Type III may be used in cold weather.

B. Coarse Aggregate: ASTM C33/C33M, except for gradation; granite, quartz, or limestone.

C. Fine Aggregate: ASTM C33/C33M, except for gradation; natural or manufactured sands.

D. Pigments: ASTM C979, inorganic iron oxides; do not use carbon black.

E. Admixtures: ASTM C494/C494M.

F. Water: Potable.

G. Reinforcing Bars: ASTM A615/A615M, Grade 40 (40,000 psi), deformed bars, galvanized.
   1. Galvanized in full accordance with ASTM A767/A767M, Class I.
   2. Epoxy coated in full accordance with ASTM A775/A775M.

H. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, galvanized or ASTM A884/A884M, epoxy coated.

I. Embedded Anchors, Dowels, and Inserts: Type 304 stainless steel, of type and size as required for conditions.

J. Shelf Angles and Similar Structural Items: Hot-dip galvanized steel per ASTM A123/A123M, of shapes and sizes as required for conditions.

K. Mortar: Portland cement-lime, as specified in Section 04 05 11 ; do not use masonry cement.

L. Cleaner: General Purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.

2.05 SOURCE QUALITY CONTROL

A. Test compressive strength and absorption of specimens selected at random from plant production.
   1. Test in accordance with ASTM C642.
   2. Select specimens at rate of (3) thrww pwe (300) three hundred cubic feet, including a minimum of (5) five per production week.
   3. Submit reports of tests by independent testing agency, showing compliance with requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine construction to receive cast stone components. Notify Architect if construction is not acceptable.

B. Do not begin installation until all unacceptable conditions have been corrected.

3.02 INSTALLATION

A. Install in full accordance with Manufacturer's written instructions.

B. Install all cast stone components in conjunction with masonry, while fully complying with those requirements of Section 04 20 00 - Unit Masonry.

C. Mechanically anchor cast stone units indicated; set remainder in mortar.

D. Setting:
   1. Drench cast stone components with clear, running water immediately before installation.
   2. Set units in a full bed of mortar unless otherwise indicated.
   3. Fill vertical joints with mortar.
   4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

3.03 TOLERANCES

A. Joints: Make all jointd 3/8" unless directed otherwise, by Architect, Engineer.
   1. Rake mortar joints 3/4 inch for pointing.
   2. Remove all excess mortar from face of stone before pointing any joints.

3. Point all joints with mortar in layers 3/8" thick and tool to a slight concave profile.
4. Leave the following joints open for sealant:
    a. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
    b. Joints in projecting units.
    c. Joints between rigidly anchored units, including soffits, panels, and column covers.
    d. Joints below lugged sills and stair treads.
    e. Joints below ledge and relieving angles.
    f. Joints labeled "expansion joint".

B. Installation Tolerances:
1. Variation from Plumb: Not more than 1/8" within (10) Ten feet.
2. Variation from Level: Not more than 1/8" within (10) Ten feet.
3. Variation in Joint Width: Not more than 1/8"' within (10) Ten feet.
4. Variation in Plane Between Adjacent Surfaces (Lipping): Not more than 1/16" difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

3.04 REPAIR

A. Repair all chips and other surface damage noticeable.

B. Repair with matching touch-up material provided by the Manufacturer and in accordance with Manufacturer's instructions.

C. Repair methods and results subject to Architect 's approval.

3.05 CLEANING

A. Keep all cast stone components clean as work progresses.

B. Clean completed exposed cast stone after mortar is thoroughly set and cured.
1. Wet surfaces with water before applying cleaner.
2. Apply cleaner to cast stone in accordance with manufacturer's instructions.
3. Remove cleaner promptly by rinsing thoroughly with clear water.
4. Do not use acidic cleaners.

3.06 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Structural steel.
2. Shear stud connectors.
3. Shrinkage-resistant grout.

B. Related Requirements:

1. Section 053100 "Steel Decking" for field installation of shear stud connectors through deck.
2. Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" for painting requirements.

1.03 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

1.04 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.05 ACTION SUBMITTALS

A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Shear stud connectors.
4. Anchor rods.
5. Threaded rods.
6. Shop primer.
7. Shrinkage-resistant grout.

B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.

4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1/D1.1M for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).

2. Electrode manufacturer and trade name, for demand-critical welds.

D. Delegated-Design Submittal: For structural-steel connections indicated on Drawings to comply with design loads, include analysis data.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer, fabricator and testing agency.

B. Welding certificates.

C. Mill test reports for structural-steel materials, including chemical and physical properties.

D. Product Test Reports: For the following:

1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.

2. Direct-tension indicators.

3. Tension-control, high-strength, bolt-nut-washer assemblies.

4. Shear stud connectors.

E. Source quality-control reports.

F. Field quality-control reports.

1.07 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).

B. Installer Qualifications: A qualified Installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.

C. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1/D1.1M.

1. Welders and welding operators performing work on bottom-flange, demand-critical welds shall pass the supplemental welder qualification testing, as required by AWS D1.8/D1.8M. FCAW-S and FCAW-G shall be considered separate processes for welding personnel qualification.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.

2. Clean and relubricate bolts and nuts that become dry or rusty before use.

3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125/F3125M, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Comply with applicable provisions of the following specifications and documents:

1. ANSI/AISC 303.
2. ANSI/AISC 360.
3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."

B. Connection Design Information:

1. Option 2: Fabricator's experienced steel detailer shall select or complete connections in accordance with ANSI/AISC 303.
   a. Select and complete connections using ANSI/AISC 360.
   b. Use Load and Resistance Factor Design; data are given at factored-load level.

C. Construction: Shear wall system.

2.02 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A992/A992M.

B. Channels, Angles: ASTM A572/A572M.

C. Plate and Bar: ASTM A572//A572M.

D. Cold-Formed Hollow Structural Sections: ASTM A500/A500M, Grade C.

E. Steel Pipe: ASTM A53/A53M, Grade B.

1. Weight Class: Standard.
2. Finish: Black except where indicated to be galvanized.

F. Welding Electrodes: Comply with AWS requirements.

2.03 BOLTS AND CONNECTORS

A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 325-1, compressible-washer type with plain finish.

B. High-Strength A490 Bolts, Nuts, and Washers: ASTM F3125/F3125M, Grade A490, Type 1, heavy-hex steel structural bolts or Grade F2280 tension-control, bolt-nut-washer assemblies with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F959/F959M, Type 490-1, compressible-washer type with plain finish.

C. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125/F3125M, Grade F1852, Type 1, heavy-hex head assemblies, consisting of steel structural bolts with splined ends; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436/F436M, Type 1, hardened carbon-steel washers.

1. Finish: Plain.

D. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

2.04 RODS

A. Unheaded Anchor Rods: ASTM F1554, Grade 36 unless noted otherwise.

1. Configuration: Straight.
2. Nuts: ASTM A563 heavy-hex carbon steel.
3. Plate Washers: ASTM A36/A36M carbon steel.
4. Washers: ASTM F436, Type 1, hardened carbon steel.
5. Finish: Plain.

B. Threaded Rods: ASTM A36/A36M.

1. Nuts: ASTM A63 heavy-hex carbon steel.
2. Washers: ASTM A36/A36M carbon steel.
3. Finish: Plain.

2.05 PRIMER

A. Steel Primer:

1. Comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

2.06 SHRINKAGE-RESISTANT GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.07 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel in accordance with ASTM A6/A6M and maintain markings until structural-steel framing has been erected.
4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill,or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 3.

F. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using automatic end welding of headed-stud shear connectors in accordance with AWS D1.1/D1.1M and manufacturer's written instructions.

G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.08 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
   1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

2.09 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.
   1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
   2. Galvanize lintels and shelf angles attached to structural-steel frame and located in exterior walls.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
   1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
   2. Bolted Connections: Inspect and test shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
   3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
      a. Liquid Penetrant Inspection: ASTM E165/E165M.
      b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
      c. Ultrasonic Inspection: ASTM E164.
      d. Radiographic Inspection: ASTM E94/E94M.
   4. In addition to visual inspection, test and inspect shop-welded shear stud connectors in accordance with requirements in AWS D1.1/D1.1M for stud welding and as follows:
      a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear stud connector.
      b. Conduct tests in accordance with requirements in AWS D1.1/D1.1M on additional shear stud connectors if weld fracture occurs on shear stud connectors already tested.

5. Prepare test and inspection reports.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.

1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

3.03 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.

B. Baseplates, Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.

C. Maintain erection tolerances of structural steel within ANSI/AISC 303.

D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.

E. Splice members only where indicated.

F. Do not use thermal cutting during erection.

G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.04 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

3.05 REPAIR

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780/A780M.

B. Touchup Painting:

1. Cleaning and touchup painting are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.06 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

1. Bolted Connections: Inspect bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1/D1.1M.
    a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
        1) Liquid Penetrant Inspection: ASTM E165/E165M.
        2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
        3) Ultrasonic Inspection: ASTM E164.
        4) Radiographic Inspection: ASTM E94/E94M.

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SECTION 05 31 00
STEEL DECKING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Composite floor deck.

B. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for normal-weight and lightweight structural concrete fill over steel deck.
2. Section 051200 "Structural Steel Framing" for shop- and field-welded shear connectors.
3. Section 099123 "Interior Painting" for repair painting of primed deck and finish painting of deck.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Composite floor deck.

B. Shop Drawings:

1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.04 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Product Certificates: For each type of steel deck.

C. Product Test Reports: For tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

1. Power-actuated mechanical fasteners.
2. Acoustical roof deck.

D. Research Reports: For steel deck, from ICC-ES.

E. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

2.02 COMPOSITE FLOOR DECK

A. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:

1. Galvanized-Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Profile Depth: As indicated.
3. Design Uncoated-Steel Thickness: As indicated.
4. Span Condition: Triple span or more.

2.03 ACCESSORIES

A. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

I. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

J. Galvanizing Repair Paint: ASTM A780/A780M.

K. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.03 INSTALLATION OF FLOOR DECK

A. Fasten floor-deck panels to steel supporting members as indicated.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped or butted at Contractor's option.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

3.04 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

B. Repair Painting:

1. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

2. Wire brushing, cleaning, and repair painting of rust spots, welds, and abraded areas of both deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Field welds will be subject to inspection.

C. Prepare test and inspection reports.

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SECTION 05 40 00

COLD FORMED METAL FRAMING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Load-bearing wall framing.
2. Exterior non-load-bearing wall framing.
3. Roof rafter framing.
4. Soffit framing.

B. Related Requirements:

1. Section 092116.23 "Gypsum Board Shaft Wall Assemblies" for interior non-load-bearing, metal-stud-framed, shaft-wall assemblies, with height limitations.

1.03 ACTION SUBMITTALS

A. Product Data: For the following:

1. Cold-formed steel framing materials.
2. Load-bearing wall framing.
3. Exterior non-load-bearing wall framing.
4. Vertical deflection clips.
5. Single deflection track.
6. Roof-rafter framing.
7. Soffit framing.
8. Post-installed anchors.
9. Power-actuated anchors.
10. Sill sealer gasket.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

C. Delegated-Design Submittal: For non-load bearing and soffit cold-formed steel framing.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product Certificates: For each type of code-compliance certification for studs and tracks.

D. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Steel sheet.
2. Expansion anchors.
3. Power-actuated anchors.

4. Mechanical fasteners.
5. Vertical deflection clips.
6. Miscellaneous structural clips and accessories.

E. Research Reports:
1. For nonstandard cold-formed steel framing, post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

B. Product Tests: Mill certificates or data from a qualified independent testing agency, or in-house testing with calibrated test equipment, indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

C. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Steel Stud Manufacturers Association.

D. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cold-formed steel framing where not sized on structural drawings.

B. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.
1. Design Loads: As indicated on Drawings.
2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
a. Exterior Non-Load-Bearing Framing: Horizontal deflection of 1/600 of the wall height when backing up brick veneer. 1/240 otherwise.
b. Soffit Framing: Vertical deflection of 1/360 of the span for live loads and 1/240 for total loads of the span.
3. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
a. Upward and downward movement of 1-1/2 inches.
5. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

C. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with AISI S100, AISI S200, and the following:
1. Floor and Roof Systems: AISI S210.
2. Wall Studs: AISI S211.

3. Headers: AISI S212.
4. Lateral Design: AISI S213.

2.02 COLD-FORMED STEEL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:
1. Grade: As required indicated.
2. Coating: G60 or equivalent.

B. Steel Sheet for Vertical Deflection Clips: ASTM A653/A653M, structural steel, zinc coated, of grade and coating as follows:
1. Grade: 50, Class 1.
2. Coating: G60.

2.03 LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: As indicated.
2. Flange Width: As indicated.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and as follows:
1. Minimum Base-Metal Thickness: As indicated.
2. Flange Width: As indicated.

C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, unpunched, with stiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: As indicated.
2. Flange Width: As indicated.

2.04 EXTERIOR NON-LOAD-BEARING WALL FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: 0.0428 inch.
2. Flange Width: 1-5/8 inches, minimum.

B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
1. Minimum Base-Metal Thickness: Matching steel studs.
2. Flange Width: 1-1/4 inches, minimum.

C. Vertical Deflection Clips: Manufacturer's standard bypass or head clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.

D. Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure, and as follows:
1. Minimum Base-Metal Thickness: 0.0428 inch.
2. Flange Width: 1 inch plus the design gap for one-story structures.

2.05 ROOF-RAFTER FRAMING

A. Steel Rafters: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: As indicated.
2. Flange Width: As indicated, minimum.

2.06 SOFFIT FRAMING

A. Exterior Soffit Frame: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0428 inch.
2. Flange Width: 1-5/8 inches, minimum.

2.07 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from ASTM A1003/A1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for framing members.

B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Foundation clips.
7. Gusset plates.
8. Stud kickers and knee braces.
9. Joist hangers and end closures.
10. Hole-reinforcing plates.
11. Backer plates.

2.08 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.

B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts, carbon-steel nuts, and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.

C. Post-Installed Anchors: Fastener systems with bolts of same basic metal as fastened metal, if visible, unless otherwise indicated; with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC193, ICC-ES AC58 or ICC-ES AC308 as appropriate for the substrate.

1. Uses: Securing cold-formed steel framing to structure.
2. Type: Torque-controlled expansion anchor or adhesive anchor.
3. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

D. Power-Actuated Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.

1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.09 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A780/A780M.

B. Nonmetallic, Nonshrink Grout: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C1107/C1107M, and with a fluid consistency and 30-minute working time.

C. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.

D. Sill Sealer Gasket: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.

2.10 FABRICATION

A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.
2. Cut framing members by sawing or shearing; do not torch cut.
3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners and install according to Shop Drawings, with screws penetrating joined members by no fewer than three exposed screw threads.
4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies by means that prevent damage or permanent distortion.

C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, conditions, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Install load-bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.

B. Install sill sealer gasket at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.03 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.

2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

b. Locate mechanical fasteners, install according to Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Section 072100 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.

I. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

3.04 INSTALLATION OF LOAD-BEARING WALL FRAMING

A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:

1. Anchor Spacing: As indicated.

B. Squarely seat studs against top and bottom tracks, with gap not exceeding 1/8 inch between the end of wall-framing member and the web of track.

1. Fasten both flanges of studs to top and bottom tracks.

2. Space studs as follows:

a. Stud Spacing: As indicated on Drawings.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.

D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.

E. Align floor and roof framing over studs according to AISI S200, Section C1. Where framing cannot be aligned, continuously reinforce track to transfer loads.

F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure.

G. Install headers over wall openings wider than stud spacing. Locate headers above openings. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.

1. Frame wall openings with not less than a double stud at each jamb of frame. Fasten jamb members together to uniformly distribute loads.
2. Install tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.

H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.

1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.

I. Install horizontal bridging in stud system, spaced vertically as indicated on Drawings. Fasten at each stud intersection.

1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs with a minimum of two screws into each flange of the clip angle for framing members up to 6 inches deep.
2. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges, and secure solid blocking to stud webs or flanges.
3. Bar Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

J. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.05 INSTALLATION OF EXTERIOR NONLOADBEARING WALL FRAMING

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure.

B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:

1. Stud Spacing: As indicated on Drawings.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.

D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.

1. Install single deep-leg deflection tracks and anchor to building structure.
2. Connect vertical deflection clips to bypassing studs and anchor to building structure.

E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Shop Drawings but not more than 48 inches apart. Fasten at each stud intersection.

1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
2. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
3. Bar Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

F. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 18 inches of single deflection track. Install a combination of bridging and stud or stud-track solid blocking of width and thickness matching studs, secured to stud webs or flanges.

1. Install solid blocking at centers indicated on Shop Drawings.

G. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.06 INSTALLATION OF JOIST FRAMING

A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Drawings.

B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.

1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches.
2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections.

C. Space joists not more than 2 inches from abutting walls, and as follows:

1. Joist Spacing: As indicated on Drawings.

D. Frame openings with built-up joist headers, consisting of joist and joist track or another combination of connected joists if indicated.

E. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement.

1. Install web stiffeners to transfer axial loads of walls above.

F. Install bridging at intervals indicated on Drawings. Fasten bridging at each joist intersection as follows:

1. Combination Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.

G. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.

H. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.07 INSTALLATION TOLERANCES

A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.08 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

3.09 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.

E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.10 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

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SECTION 05 44 00

COLD FORMED METAL TRUSSES

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. Roof trusses.

B. Related Requirements:

1. Section 054000 "Cold-Formed Metal Framing" for cold-formed steel studs, joists, and rafters.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Cold-formed steel truss materials.
2. Anchor bolts.
3. Post-installed anchors.
4. Power-actuated fasteners.
5. Mechanical fasteners.

B. Shop Drawings:

1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel trusses; fabrication; and fastening and anchorage details, including mechanical fasteners.
2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

C. Delegated-Design Submittal: For cold-formed steel trusses.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Steel sheet.
2. Expansion anchors.
3. Power-actuated anchors.
4. Mechanical fasteners.
5. Miscellaneous structural clips and accessories.

D. Research Reports: For post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

E. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.

B. Product Tests: Mill certificates or data from a qualified independent testing agency, or in-house testing with calibrated test equipment, indicating steel sheet complies with

requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design cold-formed steel trusses.

B. Structural Performance: Provide cold-formed steel trusses capable of withstanding design loads within limits and under conditions indicated.

1. Design Loads: As indicated on Drawings.
2. Deflection Limits: Design trusses to withstand design loads without deflections greater than the following:
   a. Roof Trusses: Vertical deflection of 1/360 of the span.
3. Design trusses to provide for movement of truss members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.

C. Cold-Formed Steel Truss Standards: Unless more stringent requirements are indicated, trusses shall comply with the following:

1. Floor and Roof Systems: AISI S210.
2. Lateral Design: AISI S213.
3. Roof Trusses: AISI S214.

D. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL or from the listings of another qualified testing agency acceptable to authorities having jurisdiction.

2.2 COLD-FORMED STEEL TRUSS MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:

1. Grade: As required by structural performance.
2. Coating: G60 or equivalent.

2.3 ROOF TRUSSES

A. Roof Truss Members: Manufacturer's standard steel sections.

1. Connecting Flange Width: 1-5/8 inches, minimum at top and bottom chords connecting to sheathing or other directly fastened construction.
2. Minimum Base-Metal Thickness: 0.0428 inch.

2.4 TRUSS ACCESSORIES

A. Fabricate steel-truss accessories from steel sheet, ASTM A1003/A1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for truss members.

B. Provide accessories of manufacturer's standard thickness and configuration unless otherwise indicated.

2.5 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.

B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts, carbon-steel nuts, and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.

C. Post-Installed Anchors: Fastener systems with bolts of same basic metal as fastened metal, if visible, unless otherwise indicated; with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, ICC-ES AC193, ICC-ES AC58 or ICC-ES AC308 as appropriate for the substrate.

1. Uses: Securing cold-formed steel trusses to structure.
2. Type: Torque-controlled expansion anchor or adhesive anchor.
3. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

D. Power-Actuated Fasteners: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

E. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.

1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.

F. Welding Electrodes: Comply with AWS standards.

2.6 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A780/A780M.

B. Shims: Load-bearing, high-density multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as truss members supported by shims.

2.7 FABRICATION

A. Fabricate cold-formed steel trusses and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate trusses using jigs or templates.
2. Cut truss members by sawing or shearing; do not torch cut.
3. Fasten cold-formed steel truss members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator.
    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
4. Fasten other materials to cold-formed steel trusses by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace trusses to withstand handling, delivery, and erection stresses. Lift fabricated trusses by means that prevent damage or permanent distortion.

C. Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual truss members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed steel truss to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, conditions, and abutting trusses and framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install bridge, and brace cold-formed steel trusses according to AISI S200, AISI S202, AISI S214, and manufacturer's written instructions unless more stringent requirements are indicated.

1. Coordinate with wall framing to align webs of bottom chords and load-bearing studs or continuously reinforce track to transfer loads to structure.
2. Anchor trusses securely at all bearing points.
3. Install continuous bridging and permanently brace trusses as indicated on Shop Drawings and designed according to CFSEI's Technical Note 551e, "Design Guide: Permanent Bracing of Cold-Formed Steel Trusses."

B. Install cold-formed steel trusses and accessories true to line and location, and with connections securely fastened.

1. Erect trusses with plane of truss webs plumb and parallel to each other. Align and accurately position trusses at required spacings.
2. Erect trusses without damaging truss members or connections.
3. Fasten cold-formed steel trusses by welding or mechanical fasteners.
    a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    b. Locate mechanical fasteners, install according to Shop Drawings, and comply with requirements for spacing, edge distances, and screw penetration.

C. Install temporary bracing and supports to secure trusses and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to trusses are secured.

D. Truss Spacing: As indicated on Drawings.

E. Do not alter, cut, or remove truss members or connections of trusses.

3.3 ERECTION TOLERANCES

A. Install cold-formed steel trusses level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual trusses no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 REPAIR

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel trusses with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Cold-Formed Steel Trusses Spanning 60 Feet or Longer: Verify temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed according to the approved truss submittal package.

B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

C. Cold-formed metal trusses will be considered defective if they do not pass tests and inspections.

D. Prepare test and inspection reports.

3.6 PROTECTION

A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel trusses are without damage or deterioration at time of Substantial Completion.

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SECTION 05 50 00
METAL FABRICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal Fabrications.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in Place Concrete.

B. Section 04 20 00 - Unit Masonry.

C. Section 05 12 00 - Structural Steel Framing.

D. Section 05 21 00 - Steel Joist Framing.

E. Section 05 31 00 - Steel Decking.

F. Section 09 91 13 - Exterior Painting.

G. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

E. AASHTO HB - Standard Specifications for Highway Bridges; 2005, with Errata.

F. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

G. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.

H. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.

I. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

J. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

K. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2025a.

L. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2025.

M. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2024.

N. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

O. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

P. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

Q. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing; 2021.

R. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

S. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

T. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

U. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings; 2018, with Editorial Revision.

V. ASTM B85/B85M - Standard Specification for Aluminum-Alloy Die Castings; 2018, with Editorial Revision.

W. ASTM B177/B177M - Standard Guide for Engineering Chromium Electroplating; 2011 (Reapproved 2021).

X. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

Y. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019a.

Z. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

AA. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

BB. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

CC. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

DD. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2025.

EE. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

FF. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

GG. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025.

HH. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).

II. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019.

JJ. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

KK. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

LL. SSPC-SP 2 - Hand Tool Cleaning; 2024.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

2. Design data: Submit drawings and supporting calculations, signed and sealed by a qualified professional structural engineer.
    a. Include the following, as applicable:
        1) Design criteria.
        2) Engineering analysis depicting stresses and deflections.
        3) Member sizes and gauges.
        4) Details of connections.
        5) Support reactions.
        6) Bracing requirements.

C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than (8) Eight months before start of scheduled welding work.

D. Designer's Qualification Statement.

E. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE

A. Design under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than (8) Eight months before start of scheduled welding work.

C. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 PRODUCTS

2.01 MATERIALS, STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Stainless Steel, General: ASTM A666/A666M, Type 304.

F. Stainless Steel Tubing: ASTM A554, Type 304, 16 gauge, 0.0625 inch minimum metal thickness, 1-1/2 inch diameter.

G. Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304.

H. Slotted Channel Fittings: ASTM A1011/A1011M.

I. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

J. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.

K. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

L. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

M. Shop and Touch Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

N. Touch Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with all VOC limitations of those Authorities having Jurisdiction.

2.02 MATERIALS, ALUMINUM

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.

C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.

D. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.

E. Aluminum-Alloy Sand Castings: ASTM B26/B26M.

F. Aluminum-Alloy Die Castings: ASTM B85/B85M.

G. Bolts, Nuts, and Washers: Stainless steel.

H. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

A. Fit and shop assemble all items within largest practical sections, as required for delivery to Existing Project Site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by intermittent welds and plastic filler.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.04 FABRICATED ITEMS

A. Telescopic Steel Columns: Steel pipe; prime paint finish.
   1. Diameter: As delineated within Contract Documents
   2. Height: As delineated within Contract Documents.

B. Bumper Posts and Guard Rails: As delineated within Contract Documents.

C. Bollards: Steel pipe, concrete filled as delineated within Contract Documents.

D. Joist Hangers: Strap anchors, as delineated within Contract Documents.

E. Ledge Angles, Shelf Angles, Channels, and Plates, as delineated within Contract Documents.

F. Lintels: As delneated within Contract Documents.

G. Elevator Hoistway Divider Beams: As delineated within Contract Documents.

H. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.

2.05 DOWNSPOUT BOOTS

A. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots and on-body cleanout and cover with neoprene gaskets.
   1. Configuration: Angular.
   2. Material: Cast iron; ASTM A48/A48M; casting thickness 3/8 inch (9.5 mm), minimum.
   3. Finish: Manufacturer's standard factory applied powder coat finish.
   4. Color: To be selected by Architect from Manufacturer's full range.
   5. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, and rubber coupling.
   6. Manufacturers:
      a. Downspoutboots.com, a division of J. R. Hoe & Sons www.downspoutboots.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.06 CAST IRON, TREE GRATES

A. Cast Iron Tree Grates:
   1. Material: Cast iron; ASTM A48/A48M.
   2. Manufacturers:

a. Neenah Foundry, a division of Neenah Enterprises, Inc.: www.nfco.com.
b. SiteScapes, Inc.: www.sitescapesonline.com.
c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.07 CAST IRON, TRENCH CASTINGS

A. Cast Iron Trench Castings:
1. Material: Cast iron; ASTM A48/A48M, Class 35 B (heavy duty).
2. Grate Type: Manufacturer's standard Type A.
3. Manufacturers:
a. Neenah Foundry, a division of Neenah Enterprises, Inc.: www.nfco.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.08 FINISHES, STEEL

A. Prime paint steel items.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: Two coats.

E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.09 FINISHES, ALUMINUM

A. Exterior Aluminum Surfaces: Class I color anodized.

B. Interior Aluminum Surfaces: Class I natural anodized.

C. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

D. Class II Natural Anodized Finish: AAMA 611 AA-M12C22A31 Clear anodic coating not less than 0.4 mils thick.

E. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick; light bronze.

F. Class I Color Anodized Finish: AAMA 611 AA-M12C22A44 Electrolytically deposited colored anodic coating not less than 0.7 mils thick; light bronze.

G. Class II Color Anodized Finish: AAMA 611 AA-M12C22A32 Integrally colored anodic coating not less than 0.4 mils thick; light bronze.

H. Class II Color Anodized Finish: AAMA 611 AA-M12C22A34 Electrolytically deposited colored anodic coating not less than 0.4 mils thick; light bronze.

I. Pigmented Organic Coating System: AAMA 2603 polyester or acrylic baked enamel finish; color as indicated.
1. Manufacturers:
a. PPG; Duracron: www.ppgmetalcoatings.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

J. High Performance Organic Coating System: AAMA 2604 multiple coat, thermally cured fluoropolymer system; color as indicated.
1. Manufacturers:
a. Sherwin-Williams Company; POLANE Solar Reflective 2K Urethane Enamel: oem.sherwin-williams.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

K. High Performance Organic Coating System: Multi coat, high durable polyester system; color as indicated on drawings.
1. Systems:
a. Two coat in accordance with AAMA 2604.
b. Three coat in full accordance with AAMA 2605.
2. Manufacturers:
a. Beckers Group; Beckry Tech: www.beckers-group.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

L. Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system; color as indicated.
1. Manufacturers:
a. Beckers Group; Beckry Fluor: www.beckers-group.com.
b. PPG; Duranar: www.ppgmetalcoatings.com.
c. Sherwin-Williams Company; Fluropon: www.coil.sherwin.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

M. Fluoroethylene Vinyl Ether (FEVE) Coating: Superior performing resin based organic powder coatings system complying with AAMA 2605; single coat applications when applied to aluminum with dry film thickness (DFT) of 2 to 3 mil, 0.002 to 0.003 inch; color and gloss as scheduled.
1. Apply coating to exposed metal surfaces with proper preparation and pretreatment in accordance with resin manufacturer's instructions.
2. Products:
a. PPG; Coraflon Platinum: www.ppgindustrialcoatings.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

N. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

2.10 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch within 48 inches.

E. Maximum Deviation From Plane: 1/16 inch within 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. **Confirm all** Existing Project Site conditions are acceptable, ready to receive all Work of this Section, prior starting any Work, this Section.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

3.02 PREPARATION

A. **Thoroughly clean and strip all** previously primed steel items, to bare metal surface, when welding, painting upon Existing Project Site is indicated within Contract Documents.

B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. **Install all items plumb,level, accurately fitted and free from any distortion, defects.**

B. **Provide for all erection loads,** sufficient temporary bracing, as required to maintain true alignment, until completion of erection, itallation of permanent attachments.

C. Field weld components as delineated within Contract Documents.

D. Perform all field welding in full accordance with AWS D1.1/D1.1M.

E. Obtain prior approval from Engineer of Record, for any Existing Project Site cutting or adjustments, not previously scheduled.

F. Following erection, prime all welds, abrasions and surfaces not previously shop primed.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non cumulative.

B. Maximum Offset From True Alignment: 1/4 inc.

C. Maximum Out of Position: 1/4 inch.

END OF SECTION

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SECTION 05 51 33
METAL LADDERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal Ladders.

1.02 RELATED REQUIREMENTS

A. Section 09 91 13 - Exterior Painting.

B. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 29 CFR 1910.23 - Ladders; Current Edition.

B. 29 CFR 1926.1053 - Ladders; Current Edition.

C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

D. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

E. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

F. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

G. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements; 2008 (Reaffirmed 2018).

H. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

I. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.

J. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

K. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

L. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2025a.

M. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2024.

N. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

O. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

P. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

Q. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

R. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

S. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings; 2018, with Editorial Revision.

T. ASTM B85/B85M - Standard Specification for Aluminum-Alloy Die Castings; 2018, with Editorial Revision.

U. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

V. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019a.

W. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

X. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi, 144 ksi, and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2025.

Y. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

Z. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

AA. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025.

BB. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; 2014, with Errata (2020).

CC. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172; 2019.

DD. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

EE. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

FF. SSPC-SP 2 - Hand Tool Cleaning; 2024.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide detailed Manufacturer's data sheets on each ladder, safety system product to be used, including installation instructions, particular to this Project.

C. Shop Drawings:
   1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
   2. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

E. Designer's Qualification Statement.

F. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE

A. Design all ladders under direct supervision of a Professional Structural Engineer experienced in design of this type Work and licensed within the state this particular Project is located.

B. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than (6) six monhs before start of scheduled welding Work.

C. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

PART 2 PRODUCTS

2.01 MATERIALS, STEEL

A. Steel Sections: ASTM A36/A36M.

B. Steel Tubing: ASTM A501 hot formed structural tubing

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.

E. Mechanical Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.

F. Bolts, Nuts, and Washers: ASTM A307, plain.

G. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

H. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

I. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

J. Touch Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS, ALUMINUM

A. Extruded Aluminum: ASTM B211/B211M, 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.

C. Aluminum Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6063 alloy, T6 temper.

D. Aluminum Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.

E. Aluminum Alloy Sand Castings: ASTM B26/B26M.

F. Bolts, Nuts, and Washers: Stainless steel.

G. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

2.03 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by intermittent welds and plastic filler.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Supply all components required for anchorage of fabrications. Fabricate all anchors and related components of same material and finish as fabrication.

2.04 FABRICATED LADDERS

A. Ladders: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; prime paint finish.
   1. Side Rails: 3/8 by (2) Two inch members spaced at (24) Twenty Four inches apart.
   2. Rungs: (1) One inch diameter solid round bar spaced (12) Twelve inches on center.
   3. Space rungs (10) Ten inches from face of wall surface.

2.05 PREFABRICATED LADDERS

A. Prefabricated Ladder: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.

1. Components: Manufacturer's standard rails, rungs, treads, handrails. returns, platforms and safety devices complying with the requirements of the MATERIALS article of this section.
2. Materials: Aluminum; ASTM B211/B211M 6063 alloy, T52 temper.
3. Finish: Mill finish aluminum.
4. Finish: Powder coat; color as selected by Architect from Manufacturer's full range of options.
5. Finish: Manufacturer's standard clear anodized coating, comply with AAMA 611, Class 1.
6. Finish: Manufacturer's standard hot-dipped galvanizing; comply with ASTM A153/A153M.
7. Finish: Stainless steel; No. 1 finish.
8. Manufacturers: (Basis of Design); O'Keeffe's, Inc., model, accessories as selected by Architect from Manufacturer's full range of options.
    a. Industrial Ladder & Scaffolding, Inc.: www.anyladder.com
    b. O'Keeffe's Inc; Model 501: www.okeeffes.com
    c. Precision Ladders, LLC; Fixed Alumnium Wall Ladder: www.precisionladders.com
    d. Substitutions: See Section 01 60 00 - Product Requirements.

B. Prefabricated Ship Ladder: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.
1. Components: Manufacturer's standard rails, rungs, treads, handrails. returns, platforms and safety devices complying with the requirements of the MATERIALS article of this section.
2. Materials: Aluminum; ASTM B211/B211M 6063 alloy, T52 temper.
3. Incline: 60 degrees.
4. Finish: Mill finish aluminum.
5. Finish: Powder coat; color to be selected by Architect from manufacturer's standard range.
6. Finish: Manufacturer's standard clear anodized coating, comply with AAMA 611, Class 1.
7. Finish: Manufacturer's standard hot-dipped galvanizing; comply with ASTM A153/A153M.
8. Manufacturers:
    a. ErectaStep, a SixAxis company; ErectaStep - Ships Ladder www.erectastep.com
    b. O'Keeffe's Inc; Model 520: www.okeeffes.com
    c. Precision Ladders, LLC; Alumnium Ship Stairs: www.precisionladders.com
    d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.06 FINISHES, STEEL

A. Prime paint steel items.
1. Do not prime surfaces in direct contact with concrete.
2. Do not prime surfaces where field welding is required.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: One coat.

E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.

F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.07 FINISHES, ALUMINUM

A. Exterior Aluminum Surfaces: Class I natural anodized.

B. Interior Aluminum Surfaces: Class I natural anodized.

C. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

D. Class II Natural Anodized Finish: AAMA 611 AA-M12C22A31 Clear anodic coating not less than 0.4 mils thick.

E. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick; light bronze.

F. Class I Color Anodized Finish: AAMA 611 AA-M12C22A44 Electrolytically deposited colored anodic coating not less than 0.7 mils thick; light bronze.

G. Class II Color Anodized Finish: AAMA 611 AA-M12C22A32 Integrally colored anodic coating not less than 0.4 mils thick; light bronze.

H. Class II Color Anodized Finish: AAMA 611 AA-M12C22A34 Electrolytically deposited colored anodic coating not less than 0.4 mils thick; light bronze.

I. Pigmented Organic Coating System: AAMA 2603 polyester or acrylic baked enamel finish; color as indicated.

J. High Performance Organic Coating System: AAMA 2604 multiple coat, thermally cured fluoropolymer system; color as indicated.

K. Superior Performance Organic Coating System: AAMA 2605 multiple coat, thermally cured polyvinylidene fluoride system; color as indicated.

L. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

2.08 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch within (48) Forty Eight inches

E. Maximum Deviation From Plane: 1/16 inch within (48) Forty Eight inches..

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTI

A. Verify all field conditions are acceptable, ready to receive Work, this Section, prior to commencing any Work, this Section.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

3.02 PREPARATION

A. Thoroughly clean and strip all previously primed steel surfaces to bare metal, wherever Existing Project Site welding is required.

B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components as indicated on drawings.

D. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Obtain approval from Engineer of Record, prior to Existing Project Site cutting or making adjustments not previously scheduled.

F. After erection, prime those welds, abrasions, and surfaces not shop primed , except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch er story, non cumulative.

B. Maximum Off set From True Alignment: 1/4 inch .

C. Maximum Out of Position: 1/4 inch.

END OF SECTION

SECTION 06 10 53
MISCELLANEOUS ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof mounted curbs.

B. Roofing nailers.

C. Roofing cant strips.

D. Preservative treated wood materials.

E. Fire retardant treated wood materials.

F. Communications and electrical room mounting boards.

G. Concealed wood blocking, nailers, and supports.

H. Miscellaneous wood nailers, furring and grounds.

1.02 RELATED REQUIREMENTS

A. Section 0 30 00 - Cast in Place Concrete.

B. Section 09 21 16 - Gypsum Board Assemblies.

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY"...

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).

D. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing; 2010 (Reapproved 2024).

E. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Wood Structural Panels (Plywood or Oriented Strand Board) to Wood Based Floor System Framing; 2019a.

F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

G. ASTM E518/E518M - Standard Test Methods for Flexural Bond Strength of Masonry; 2022.

H. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.

I. PS 1 - Structural Plywood; 2023.

J. PS 20 - American Softwood Lumber Standard; 2025.

K. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber; 2019.

L. SPIB (GR) - Standard Grading Rules; 2021.

M. WCLIB (GR) - WCLB Standard Grading Rules for West Coast & Imported Softwood Lumber No.18; 2024.

N. WWPA G-5 - Western Lumber Grading Rules; 2025.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide technical data on wood preservative materials and application instructions.

C. Warranty Documentation: Submit Manufacturer warranty and ensure that forms have been completed in Owner's name and registered with Manufacturer.

1.05 DELIVERY, STORAGE, HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, and installation.

1.06 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. **Correct all** defective Work, immediately.

C. Manufacturer Warranty: Provide Manufacturer's (10) Ten Year Warranty, for all materials and labor, commencing upon previously established Project SuSubstantial Completion Date.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: Douglas Fir-Larch, unless otherwise indicated.
   2. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
   3. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   4. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

B. Provide sustainably harvested wood; Reference Section 01 60 00 - Product Requirements for additional Content.

C. Provide wood harvested within a 500 mile radius of said ExistingProject site.

D. Lumber salvaged from deconstruction or demolition of existing buildings or structures is permitted in lieu of sustainably harvested lumber provided it is clean, denailed, and free of paint and finish materials, and other contamination; identify source.

E. Lumber fabricated from recovered timber is permitted in lieu of sustainably harvested lumber, unless otherwise noted, provided it meets the specified requirements for new lumber and is free of contamination; identify source.

2.02 DIMENSION LUMBER, CONCEALED APPLICATIONS

A. Grading Agency: Southern Pine Inspection Bureau, Inc; SPIB (GR).

B. Grading Agency: West Coast Lumber Inspection Bureau; WCLIB (GR).

C. Grading Agency: Western Wood Products Association; WWPA G-5.

D. Sizes: Nominal sizes as indicated on drawings, S4S.

E. Moisture Content: S-dry or MC19.

F. Stud Framing for sizes 2 by 2 through 2 by 6:
   1. Species: Allowed under referenced grading rules.
   2. Species: Douglas Fir-Larch.
   3. Grade: No.2.

G. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No.2 or Standard Grade.
   2. Boards: Standard or No.3.

H. Sill Plates: 1-1/2 inch thick laminated strand lumber.
   1. Comply with AWPA U1 use category 2.

2. R-Value: 1.86 when tested in accordance with ASTM E518/E518M.
3. Products:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Window and Door Bucks: 1-1/2 inch thick laminated strand lumber.
1. Comply with AWPA U1 use category 2.
2. R-Value: 1.86 when tested in accordance with ASTM E518/E518M.
3. Products:
    a. Prebuck, LLC; Window and Door Buck: www.tremcosealants.com/#sle.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content..

J. Parapet Caps: 1-1/2 inch thick, laminated strand lumber.
1. Comply with AWPA U1 use category 2.
2. R-Value: 1.86 when tested in accordance with ASTM E518/E518M.
3. Products:
    a. Prebuck, LLC; Parapet Cap: www.tremcosealants.com/#sle.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.03 CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: PS 1, A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

B. Other Applications:
1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
3. Other Locations: PS 1, C-D Plugged or better.

2.04 ACCESSORIES

A. Fasteners and Anchors:
1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
2. Anchors: Toggle bolt type for anchorage to hollow masonry.

B. Die Stamped Connectors: Hot dipped galvanized steel, sized to suit framing conditions.
1. For contact with preservative treated wood in exposed locations, provide minimum G185 galvanizing complying with ASTM A653/A653M.
2. Manufacturers:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

D. Sill Flashing: Reference Drawings and Contract Documents for additional Content.

E. Construction Adhesives: Adhesives complying with ASTM C557 or ASTM D3498.
1. Manufacturers:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. General Purpose Construction Adhesives:
1. Manufacturers:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Termite Shield:

2.05 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Fire Retardant Treatment:
   1. Manufacturers:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Treat exterior rough carpentry items.
      c. Do not use treated wood in direct contact with ground.
   3. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature, low hygroscopic type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. Interior rough carpentry items are to be fire retardant treated.
      c. Treat rough carpentry items as indicated.
      d. **Do not** use treated wood in applications exposed to weather or where the wood may become wet.

C. Preservative Treatment:
   1. Manufacturers:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber exposed to weather.
      c. Treat lumber in contact with roofing, flashing, or waterproofing.
      d. Treat lumber in contact with masonry or concrete.
      e. Treat lumber less than 18 inches above grade.
      f. Treat lumber in other locations as indicated.
   3. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
      b. Treat plywood in contact with roofing, flashing, or waterproofing.
      c. Treat plywood in contact with masonry or concrete.
      d. Treat plywood less than 18 inches above grade.

e. Treat plywood in other locations as indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on cementitious foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

B. Install sill gasket under sill plate bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

C. Coordinate installation of rough carpentry members specified in other sections.

3.02 INSTALLATION, GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 BLOCKING, NAILERS, SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

F. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Chalkboards and marker boards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.

3.04 ROOF RELATED, CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at roof openings except where prefabricated curbs are specified and where specifically indicated otherwise. Form corners by alternating lapping side members.

3.05 INSTALLATION, CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on edges and into studs in field of board.

1. At all fire rated walls, install board over wall board indicated as part of the fire rated assembly.
2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.
4. Size and Location: As delineated within Contract Documents.

3.06 SITE APPLIED, WOOD TREATMENT

A. Apply preservative treatment compatible with factory applied treatment, all site sawn cuts, as required to fully comply with Manufacturer's written instructions.

B. Allow preservative to dry prior to erecting members.

3.07 CLEANING, PROTECTION

A. Waste Disposal: Construction Waste Management, Disposal, Reference Contract Documnets and those requirements set forth by all Local Authorities having Jurisdiction for additional Content.
   1. Fully comply, all applicaple regulations.
   2. **Do not burn any materials, within Existing Project Site.**

B. **Do not leave any wood, shavings, sawdust upon Existing Project Site.**

C. **Prevent any sawdust or wood shavings from entering drainage systems.**

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 06 16 00
SHEATHING

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. Shear Wall sheathing.
2. Roof Sheathing

B. Related Requirements:

1. Section 072500 "Weather Barriers" for water-resistive barrier applied over wall sheathing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer of air-barrier and water-resistant glass-mat gypsum sheathing.

1. Installer shall be licensed by ABAA according to ABAA's Quality Assurance Program and shall employ ABAA-certified installers and supervisors on Project.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PANEL PRODUCTS

A. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.

B. Factory mark panels to indicate compliance with applicable standard.

2.2 SHEAR WALL SHEATHING

A. Plywood Sheathing: DOC PS 1, Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 32/16.
2. Nominal Thickness: Not less than 1/2 inch.

B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1, Structural I sheathing.

1. Span Rating: Not less than 32/16.
2. Nominal Thickness: Not less than 1/2 inch

2.3 ROOF SHEATHING

A. Plywood Sheathing: DOC PS 1, Exposure 1, Structural I sheathing.
   1. Span Rating: Not less than 40/20.
   2. Nominal Thickness: Not less than 5/8 inch.

B. Oriented-Strand-Board Sheathing: DOC PS 2, Exposure 1, Structural I sheathing.
   1. Span Rating: Not less than 40/20.
   2. Nominal Thickness: Not less than 5/8 inch.

2.4 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

B. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:
   1. ICC-ES evaluation report for fastener.

D. Use No. 10 self-tapping screws with a minimum head diameter of 0.333 inch in accordance with ASTM C1513 unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections. Install fasteners without splitting wood.

E. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

F. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

G. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL PANEL INSTALLATION

A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

B. Fastening Methods: Fasten panels as indicated below:
   1. Wall Sheathing:
      a. Screw to cold-formed metal framing.
      b. Space panels 1/8 inch apart at edges and ends.

3.3 FIELD QUALITY CONTROL

A. Testing and Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Prepare test and inspection reports.

END OF SECTION

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SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Wood door frames.

C. Wood casings and moldings.

D. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS

A. Section 08 14 16 - Flush Wood Doors.

B. Section 09 91 13 - Exterior Painting.

C. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

C. ANSI A208.1 - American National Standard for Particleboard; 2022.

D. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

E. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

G. ASTM C1036 - Standard Specification for Flat Glass; 2025.

H. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

J. AWI (QCP) - Quality Certification Program; Current Edition.

K. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

L. AWMAC (GIS) - Guarantee and Inspection Services Program; Current Edition.

M. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

N. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.

O. BHMA A156.9 - Cabinet Hardware; 2020.

P. GSA CID A-A-1936 - Adhesives, Contact, Neoprene Rubber; 1996a (Validated 2013).

Q. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

R. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

S. NHLA G-101 - Rules for the Measurement and Inspection of Hardwood and Cypress; 2023.

T. PS 1 - Structural Plywood; 2023.

U. PS 20 - American Softwood Lumber Standard; 2025.

V. WDMA I.S. 4 - Industry Specification for Preservative Treatment for Millwork; 2024.

W. WI (CCP) - Certified Compliance Program (CCP); Current Edition.

X. WI (CSIP) - Certified Seismic Installation Program (CSIP); Current Edition.

Y. WI (MCP) - Monitored Compliance Program (MCP); Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all Work with plumbing rough-in, electrical rough-in, installation of associated and adjacent components, and as directed by Architect.

B. Sequence installation, as required to ensure utility connections are achieved with in an orderly and expeditious manner.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content

B. Product Data:
   1. Provide Manufacturer's product data, storage and handling instructions for factory-fabricated units.
   2. Provide data on fire retardant treatment materials and application instructions.
   3. Provide Manufacturer's instructions for attachment and finish hardware..

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
   3. Include certification program label.

D. Samples: Submit two samples of finish plywood, (18) eighteen inches square, accurtely illustrating wood grain and finish.

E. Samples: Submit Cap, Base, and Column Shaft, one half full size, accurately illustrating construction and finish.

F. Certificate: Submit all labels and certificates, as required by quality assurance, control programs.

G. Manufacturer's Instructions: Provide manufacturer's installation instructions for factory-fabricated units.

1.06 QUALITY ASSURANCE

A. Fabricators:

B. Fabricator Qualifications: Company specializing in fabricating those Products specified, this Section with minimum (15) Fifteen years, documented experience.
   1. Company with at least (3) Three projects within past (10) Ten years, with value of woodwork within 20 percent of cost of woodwork for this particular Project.
   2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of this particular Project.
   3. Single Source Responsibility: Provide and install all Work, this Section from single fabricator.

C. Quality Certification:
   1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
      a. This AWI (QCP) Project shall be registered.
   2. Comply with AWMAC (GIS) woodwork association quality certification service/program in accordance with requirements for work specified in this section.
   3. Comply with WI (CCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section www.woodworkinstitute.com/#sle.
   4. Provide labels or certificates indicating that work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
   5. Provide designated labels on shop drawings as required by certification program.
   6. Provide designated labels on installed products as required by certification program.

7. Submit certifications upon completion of installation that verifies all Work is in full compliance with Contract Documents.

1.07 MOCK UPS

A. Provide column wrap mock up, full size, accurately illustrating construction and finish.

B. Reference Section 01 40 00 - Quality Requirements for additional content.

C. Locate as directed by Architect.

D. **Mock ups may not remain as portion of permanent Work, this particular Project.**

1.08 DELIVERY, STORAGE, HANDLING

A. Deliver factory fabricated units to project site in original packages, containers or bundles bearing brand name and identification.

B. Store finish carpentry items under cover, elevated above grade, and in a dry, well ventilated area not exposed to heat or sunlight.

C. Protect from moisture damage.

D. Handle materials and products to prevent damage to edges, ends, or surfaces.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

C. Exterior Woodwork Items:
   1. Window Casings and Moldings: Softwood; prepare for paint finish.
   2. Soffits and Fascias: Prepare for paint finish.
   3. Enclosing Soffit Spaces: As detailed.
   4. Enclosing Structural Members: Softwood lumber; "PT" preservative treated.
   5. Handrails: Redwood; prepare for stained and sealed finish.
   6. Brackets, Finials, and Pediments: Prepare for paint finish.
   7. Bench Seats and Backs: "PT" preservative treated.

D. Interior Woodwork Items:
   1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.
   2. Door, Glazed Light, and Pocket Door Frames: White birch; prepare for paint finish.
   3. Window Sills: Clear fir; prepare for transparent finish.
   4. Stairs, Balustrades, and Handrails: Clear fir; prepare for stained finish.
   5. Suspended Wood Ceiling System: "FR-S" treated.
   6. Glazed Screen Partition System: Clear fir; prepare for transparent finish.
   7. Valance Work: Clear fir; prepare for paint finish.
   8. Loose Shelving: Birch plywood; prepare for paint finish.
   9. False Box Beams: Knotty Tight Knot Cedar; unfinished.

E. Factory Fabricated Wood Columns:
   1. Species: as indicated on drawings.
   2. Exterior Capitals and Bases: Wood.
   3. Ornamental Capitals for Higher Orders: Wood.
   4. Plinths: Wood.
   5. Products:
      a. Royal Corinthian; RoyalClassic Wood Columns: www.royalcorinthian.com
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional content.

F. Factory Fabricated Cellular PVC Column Covers:
   1. Column Style Shape: as delineated within Contract Documents
   2. Column Style Face: as delineated within Contract Documents.
   3. Cap Style: as delineated within Contract Documents.
   4. Base Style: as delineated within Contract Documents.
   5. Column Bottom Shaft Width: as delineated within Contract Documents.
   6. Column Overall Height: as delineated within Contract Documents.
   7. Column Wall Thickness: as delineated within Contract Documents.
   8. Products:
      a. Royal Corinthian; RoyalWrap PVC Column Wraps: www.royalcorinthian.com
      b. Versatex Building Products, LLC; Versawrap: www.versatex.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional content.

G. Manufactured Attic Stairs:
   1. Products:
      a. FAKRO America LLC; Attic Ladder LWF: www.fakrousa.com
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 SUSTAINABILITY CHARACTERISTICS

A. Provide sustainably harvested wood, certified and labeled; Reference Section 01 10 00 - Product Requirements for additional Content.

B. Provide wood harvested within specified radius of Existing Project Site, Reference Section 01 60 00 - Product Requirements for aditional Content.

C. Provide composite wood Products fully complying with all applicable composite wood indoor emission requirements, per those Local Authorities Having Jurisdiction.

2.03 LUMBER MATERIALS

A. Softwood Lumber: maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.
   1. Grading: In accordance with rules certified by ALSC; www.alsc.org.

B. Hardwood Lumber: maximum moisture content of 6 percent ; with vertical grain , of quality suitable for transparent finish.
   1. Grading: In accordance with NHLA G-101 Grading Rules; www.nhla.com.

2.04 SHEET MATERIALS

A. Softwood Plywood, Not Exposed to View: Any face species, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.

B. Softwood Plywood, Exposed to View: Face species as indicated, plain sawn, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.
   1. Grading: Certified by the American Plywood Association.

C. Hardwood Plywood: Face species as indicated, plain sawn, book matched, medium density fiberboard core; HPVA HP-1 Front Face Grade AA, Back Face Grade 1, glue type as recommended for application.

D. Prefinished Paneling: , V-cut vertical joint scoring; 3/16 inch thick, finished as gloss.

E. Particleboard: ANSI A208.1 Composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.

F. Hardboard: ANSI A135.4 Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth one side (S1S).

G. Pegboard: Pressed wood fiber with resin binder, standard grade; 1/8 inch thick, with holes spaced at 1 inch on center in both directions.

2.05 PANEL CORE MATERIALS

A. Medium Density Fiberboard (MDF): Composite panel composed of cellulosic fibers, additives, and bonding system; cured under heat and pressure; comply with ANSI A208.2.
   1. Grade: 115; moisture resistance: MR10.
   2. Panel Thickness: 1 inch.
   3. Products:
      a. Roseburg Forest Products; Medium Density Fiberboard: www.roseburg.com.
      b. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

B. Basic Hardboard: Panel manufactured from inter felted lignocellulosic fibers consolidated under heat and pressure; comply with ANSI A135.4.
   1. Class: Tempered; surface: Smooth one side (S1S).
   2. Nominal Thickness: 1/4 inch.

2.06 PLASTIC LAMINATE MATERIALS

A. Plastic Laminate: NEMA LD 3, color as selected by Architect from Manufacturer's full range of options.
   1. Products:
      a. Arborite: www.arborite.com
      b. Panolam Industries International, Inc.: www.panolam.com
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Low Pressure Laminate: pattern and gloss surface texture as directed by Architect.

C. Laminate Backing Sheet: NEMA LD 3, BKL; undecorated plastic laminate

D. Laminate Adhesive: Type recommended by laminate manufacturer to suit application; not containing formaldehyde or other volatile organic compounds.

2.07 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Adhesive for factory fabricated units: Manufacturer's recommended adhesive for application.

C. Fasteners: Of size and type to suit application; as indicated on drawings, finish in all concealed and all exposed locations.

D. Fasteners for Exterior Applications: Stainless steel; length required to penetrate wood substrate 1-1/2 inch minimum.

E. Concealed Joint Fasteners: Threaded steel.

F. Metal Z Shaped Support Clips: Paired, cleated, structural anchorage components applied to back of finish carpentry items and walls for mounting.
   1. Material: Extruded aluminum.
   2. Thickness: 0.115 inch.
   3. Height: 1.25 inches.
   4. Stand Off: 0.240 inch.
   5. Lift Off: 0.375 inch.
   6. Width: 72 inches.
   7. Products:
      a. Eagle Aluminum; Eagle Z-Clips: www.eagle-aluminum.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.08 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Lumber for shimming and blocking.

C. Plastic Edge Trim: Extruded convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness; color as directed by Architect from Manufacturer's full range.

D. Aluminum Trim and Mouldings: Extruded, alloy 6063 T5.
   1. Type: Profile as selected from manufacturer's standard range.
   2. Flange: 0.188 inch.
   3. Depth: 3/4 inch.
   4. Finish: Clear anodized.
   5. Products:
      a. Eagle Aluminum; Architectural Woodwork Trim: www.eagle-aluminum.com.
      b. Flannery, Inc; Metal Edge Trim: www.flannerytrim.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Aluminum Edge Trim: Extruded convex shape; smooth surface finish; self locking serrated tongue; of width to match component thickness; natural mill finish.

F. Glass: Type re: Specifications Section 08 80 00 Glazing.

G. Plain Glass: ASTM C1036 annealed float glass, clear, 6 mm thick minimum.

H. Safety Glass: ASTM C1048, fully tempered; clear; 1/8 inch thick, minimum.

I. Safety Glass: Laminated glass complying with 16 CFR 1201 and ANSI Z97.1; clear; nominally 6 mm thick.

J. Primer: Alkyd primer sealer.

K. Wood Filler: Solvent base, tinted to match surface finish color.

L. Attachment Accessories: as indicated on drawings and directed by Architect.

2.09 HARDWARE

A. Hardware: Comply with BHMA A156.9.

B. Shelf Standards:

C. Shelf Brackets:

D. Countertop Support Brackets: Fixed, L shaped, corner reinforced, face of stud mounting.
   1. Material: Steel.
      a. Finish: Manufacturer's standard, factory-applied, textured powder coat.
      b. Color: Black.
      c. Height: 5 inches.
      d. Support Length: 8 inches.
   2. Products:
      a. A&M Hardware, Inc; Standard Brackets: www.aandmhardware.com
      b. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

E. Countertop Support Brackets: Fixed, "L" shaped, face of stud mounting.
   1. Material: Steel; T-shape cross section.
      a. Finish: Manufacturer's standard, factory applied, textured powder coat.
      b. Color: Black.
      c. Support Length: (12) Twelve inches.
   2. Products:
      a. A&M Hardware, Inc; Hybrid Brackets: www.aandmhardware.com
      b. A&M Hardware, Inc; Heavy-Duty Hybrid Brackets: www.aandmhardware.com
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Vanity Brackets: Fixed, ADA-Compliant, face of stud mounting.
   1. Material: Steel; formed compound shapes.
      a. Finish: Manufacturer's standard, factory applied, textured powder coat.
      b. Color: Black.
   2. Material: Stainless steel; formed, compound shapes.
      a. Finish: Brushed finish.
   3. Material: Aluminum angles.
   4. Products:
      a. A&M Hardware, Inc; ADA Vanity Brackets: www.aandmhardware.com
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Countertop Brackets: Fixed, L-shaped, top of knee wall mounting.
   1. Material: Steel plates.
   2. Height: (12) Twelve inches.
   3. Plate Thickness and Width: 3/8 inch by 2-1/2 inches.

H. Vanity Brackets: Fixed, cantilevered support leg, face of stud mounting.
   1. Materials: Steel L-shapes.
   2. Finish: Manufacturer's standard, factory applied, textured powder coat.
   3. Color: Black.
   4. Angle Depth: (2) Two inches.
   5. Width: (28) Twenty Eight inches.
   6. Support Length: (18) Eighteen inches.
   7. Products:
      a. A&M Hardware, Inc; Floating Vanity Brackets: www.aandmhardware.com

I. Countertop Brackets: Concealed vertical leg, side of stud mounting.
   1. Material: Steel plates.
      a. Color: Black.
      b. Vertical Leg: (12) Twelve inches.
      c. Support Plate Length: (8) Eight inches.
      d. Plate Width: 2 1/2 inches.
   2. Products:
      a. Centerline Brackets; Floating Wall Mount: www.countertopbracket.com
      b. Substitutions: Reference Sectopm 01 60 00 - Product Requirements for additional Content.

J. Track and Hanger Systems
   1. Products:
      a. Accuride International Inc; 116RC Heavy-Duty Linear Track System: www.accuride.com
      b. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

2.10 WOOD TREATMENT

A. Factory Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.

B. Fire Retardant Treatment (FR-S Type): Chemically treated and pressure impregnated; capable of providing flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E84.

C. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 treatment using waterborne preservative with 0.25 percent retainage.

D. Water Repellent Preservative Treatment by Dipping Method: WDMA I.S. 4, with 0.25 percent retainage.

E. Wood Preservative (Surface Application):

F. Shop pressure treat wood materials requiring fire rating to concealed wood blocking.

G. Provide identification on fire retardant treated material.

H. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

I. Redry wood after pressure treatment, per Manufactutrer's instructions

2.11 SITE FINISHING, MATERIALS

A. Stain, Shellac, Varnish, and Finishing Materials: Comply with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Field Finishing: Reference Section 09 91 23 Interior Painting for additional Content.

2.12 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. Fit exposed sheet material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.

C. Cap exposed plastic laminate finish edges with aluminum trim.

D. Shop prepare and identify components for book match grain matching during site erection.

E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

F. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

G. Apply laminate backing sheet to reverse face of plastic laminate finished surfaces.

2.13 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Stain: As selected by Architect from Manufacturer's full range of options.
      c. Sheen: As selected by Architect from Manufacturer' s full range of options.
   2. Opaque:
      a. System - 1, Lacquer, Nitrocellulose.
      b. Color: As selected by Architect from Manufacturer's full range of options.
      c. Sheen: As selected by Architect from Manufacturer's full range of options.

E. Stain, seal, and varnish exposed to view surfaces. Brush apply only.

F. Seal internal surfaces and semi-concealed surfaces. Brush apply only.

G. Prime paint surfaces in contact with cementitious materials.

H. Back prime woodwork items to be field finished, prior to installation.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify adequacy of all backing, support framing.

B. Confirm all mechanical, electrical, plumbing, building items affecting Work, this Section are properly placed, ready to receive Work, this Section.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install allcustom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Install all factory fabricated units in full accordance with Manufacturer's written installation instructions.

C. Set and secure materials and components in place, plumb and level.

D. Carefully scribe all work abutting any other components, with maximum gaps of 1/32 inch. **Do not** use additional overlay trim to conceal larger gaps.

E. Install prefinished paneling with full bed contact adhesive applied to substrate.

F. Install all hardware in full accordance with Manufacturer's instructions.

3.03 SITE APPLIED, WOOD TREATMENT

A. Apply all preservative treatment in full accordance with Manufacturer's instructions.

B. Brush apply one coats of preservative treatment upon all wood, in contact with cementitious materials. Treat all Existing Project Site cuts.

C. Allow all preservative to fully dry, prior to erecting any members.

3.04 PREPARATION, SITE FINISHING

A. Set exposed fasteners. Apply wood filler within all exposed fastner locations, sand alll Work smooth.

B. Before beginning installation, prime paint all surfaces, all items, assemblies, in contact with any cementitious materials.

3.05 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

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SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Architectural Wood Casework.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 Miscellaneous Rough Carpentry.

B. Section 09 91 13 Interior Painting.

C. Section 12 36 00 Countertops.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) Architectural Woodwork Standards, Current Edition.

1.04 SUBMITTALS

A. Reference Section 01 30 00 Administrative Requirements for additional Content.

B. Shop Drawings: Delineate all materials, component profiles, fastening methods, devices, jointing and any accessories particular to this Project.

1. Minimum Scale of Detail Drawings: 1-1/2” to 1 foot.
2. Provide all information required via AWI/AWMAC/WI (AWS), Current Edition.
3. Present Certification Label.

C. Product Data: Provide detailed Product Data, including cut sheets for all hardware and accessories, particular to this Project.

D. Product Samples: Submit (2) Two Product Samples, Manufacturer’s standard size, as required to accurately represent construction, color, finish, pattern, operation, all accessories and all hardware.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in Work delineated within this Section, minimum (15) Fifteen years documented experience.

1.06 DELIVERY, STORAGE, HANDLING

A. Deliver all Products to Existing Project Site, within Manufacture’s packaging, including identification labels, tracking numbers particular to this Project.

B. Store all Products above floor surface, within climate controlled area of Building and protect from damage, Construction activities.

1.07 FIELD CONDITIONS

A. Prior to beginning Work, during installation and following completion of said Scope of Work, maintain temperature, humidity conditions, at same levels required for building occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Grade: Unless directed otherwise, provide Products of quality Specified within AWI/AWMAC/WI (AWS), Current Edition, for Premium Grade.

B. Plastic Laminate Faced Cabinets: Custom Grade.

C. Cabinets:

1. Finish, Exposed Exterior Surfaces: Decorative Laminate.
2. Finish, Exposed Interior Surfaces: Decorative Laminate.
3. Finish, Concealed Surfaces: Manufacture's Standard.
4. Door and Drawer Front Edge Profiles: Square edge, including applied band.
5. Door and Drawer Front Retention Profiles: Removable stop.
6. Casework Construction Type: Type A Frameless.
7. Interface Style for Cabinet and Door: Style 1 Overly, flush overlay.
8. Grained Face Layout for Cabinet and Door Fronts: Flush panel.
   a. Custom Grade: Doors, drawer fronts and false fronts, wood grain shall run and match vertically within each cabinet.
9. Cabinet Design Series: As identified within Contract Documents.
10. Adjustable Shelf Loading: Minimum (75) Seventy Five pounds per square foot.
11. Drawer Side Construction: Manufacturer's Standard.

2.02 WOOD BASED COMPONENTS

A. **Wood fabricated from old growth lumber will not be permitted.**

B. Use wood type as delineated within Contract Documents.

2.03 LAMINATE MATERIALS

A. Manufacturers:

1. Use only those Manufacturers identified within Contract Documents.
2. Substitutions: Reference Section 01 60 00 Product Requirements for additional Content.

B. Provide specific types as scheduled:

1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color, all color selections as chosen by Architect from Manufacturer's full range of options.
2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, all color selections as chosen by Architect from Manufacturer's full range of options.

2.04 ACCESSORIES

A. Plastic Edge Banding: Extruded PVC, flat shaped, smooth finish, self-locking serrated tongue, as required to match component thickness.

1. Color: As selected by Architect from Manufacturer's full range of options.
2. Use as directed by Architect.

B. Fasteners: Size and type, as required, this particular Project.

C. Bolts, Nuts, Washers, Lags, Pins and Screws: type and size, required, this particular Project. Galvanized or chrome finish within all concealed locations, stainless steel or chrome finish, all locations exposed to view.

D. Concealed Joint Fasteners: Threaded steel.

E. Grommets: Manufacturer's premium plastic, color as selected by Architect from Manufacturer's full range of options.

2.05 HARDWARE

A. Adjustable Shelf Supports: Heavy Duty Type, side mounted system utilizing multiple holes, as required for pin supports, coordinated self-rests, satin chrome finish, (1) one inch spacing adjustments.

B. Drawer, Door Pulls: U shaped wire pull, steel, satin finish.

1. Product: PO256A as Manufactured by Liberty.

C. Cabinet Locks: Keyed cylinder, three (3) keys per lock, master keyed, steel, satin finish.

D. Catches: Magnetic type.

E. Drawer Slides:

1. Type: Heavy Duty, Full extension, including overtravel.
2. Static Load Capacity: Heavy Duty, Commercial Grade.
3. Mounting: Side mounted.
4. Stops: Integral type.
5. Features: Self closing, stay closed type.

F. Hinges: Heavy Duty, European style concealed self-closing type, steel, satin finish.

1. Products:
   a. Grass America, Inc.: www.grassusa.com.
   b. Julius Blum, Inc.: ww.blum.com.

2.06 FABRICATION

A. Assembly: Shop assemble all casework, as required for delivery to Existing Project Site.

B. Edging: Fit all shelves, doors, material as delineated within Contract Documents. **Use no more than one piece edging, any single length.**

C. Fitting: When necessary to cut and fit within Existing Project Site, provide all materials, as required to provide ample allowance for said cutting. Provide matching trim, all scribing, cutting locations.

D. Plastic Laminate: Apply plastic laminate finish within full uninterrupted sheets. Fit all corners, hairline joints, secure only with concealed fasteners. Slightly bevel all arises. Locate counter butt joints, minimum (48) forty eight inches from sink cut outs.

1. Appy laminate backing sheet to reverse side, all plastic laminate finished surfaces.
2. Enclose all exposed plastic laminate finish edges with plastic trim.

E. Matching Wood Grain: Fully comply with all requirements, those Standards identified within Contract Documents.

F. Provide all cutouts, as required for utilities, accessories, this particular Project. Field confirm all locations. Seal tight all cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm adequacy of all backing and support framing, prior to commencing any Work, this Section.

B. Verify locations and sizes of all utility rough in Work associated, this Section.

3.02 INSTALLATION

A. Set and secure all Work in place, as required to ensure plumb, level and rigid installation.

B. Provide fixture attachments within all concealed locations, as required for any wall mounted components.

C. Install only concealed joint fasteners, as required to align and secure all adjoining cabinets.

D. Carefully scribe all casework abutting any other components, as required to ensure maximum gaps of 1/32 inch**. Do not use additional overlay trim for this Work.**

E. Secure cabinets to floor surface, as required to implement appropriate angles and anchorage devices.

F. Countersink all anchorage devices. Conceal via solid wood plugs of a species, as required to match adjacent wood finish and flush with all surrounding surfaces.

3.03 ADJUSTING

A. Adjust all operating parts, as required to provide only correct, smooth functioning.

3.04 CLEANING, PROTECTION

A. Thoroughly clean all Work, this Section.

B. Protect all Work, this Section, from Damage.

C. Replace all Damaged Work, this Section, immediately.

END OF SECTION

SECTION 06 83 16
FIBERGLASS REINFORCED PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fiberglass Reinforced Paneling.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "

A. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2022.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Contetnt.

B. Product Data: Provide detailed Product Data, particular to this Project , describing all physical performance characteristics; including sizes, patterns, all available colors available; and including Manufacturer's written installation instructions.

PART 2 PRODUCTS

2.01 PANEL SYSTEMS

A. Fiberglasss Reinforced Panelng:
   1. Panel Size: (4) four by (8) eight feet.
   2. Panel Thickness: 0.0 inch
   3. Surface Design: As selected by Architect from Manufacturer's full range of options.
   4. Color: As selected by Architect from Manufacturer's full range of options
   5. Attachment Method: Adhesive only, sealant joints, no trim.

2.02 MATERIALS

A. Panels: Fiberglass reinforced plastic (FRP), complying with ASTM D5319.
   1. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.

B. Trim: Vinyl; color a selected by Architect from Manufacturer's full range of options.

C. Adhesive: Only that type recommended by panel Manufacturer.

D. Sealant: Only that type recommended by panel Manufacturer, color as selected by Architect from Manufacturer's full range of options.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all existing conditions, substrate flatness prior to commencing any Work, this Section

B. Confirm all substrate conditions are ready to receive Work, this Section, prior to beginning any Work, this Section.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION WALLS

A. Install all paneling in full accordance with Manufacturer's written instructions.

B. Cut, drill paneling only with carbide tipped saw blades, drill bits.

C. Apply adhesive to back side of paneling, using trowel method,only as recommended by adhesive Manufacturer.

D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.

E. Install panels with manufacturer's recommended gap for panel field and corner joints.

F. Place trim on panel before fastening edges, as required.

G. Fill channels in trim with sealant before attaching to panel.

H. Install all trim with adhesive, screws, as required by this particular Project.

I. Seal all gaps, only with Manufacturer recommended applicable sealant, as required to prevent any moisture intrusion.

J. Remove all excess sealant, immediately.

END OF SECTION

SECTION 07 14 00
FLUID APPLIED WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid Applied Waterproofing.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in Place Concrete.

B. Section 04 20 00 - Unit Masonry.

C. Section 07 21 00 - Thermal Insulation.

D. Section 07 62 00 - Sheet Metal Flashing and Trim.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency.

B. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin Set Ceramic Tile and Dimension Stone Installation.

C. ASTM C518 - Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

D. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.

E. ASTM C836/C836M - Standard Specification for High Solids Content, Cold Liquid Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.

F. ASTM C1029 - Standard Specification for Spray Applied Rigid Cellular Polyurethane Thermal Insulation.

G. ASTM C1306/C1306M - Standard Test Method for Hydrostatic Pressure Resistance of a Liquid-Applied Waterproofing Membrane; 2024.

H. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension.

I. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.

J. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.

K. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.

L. ASTM D751 - Standard Test Methods for Coated Fabrics.

M. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.

N. ASTM D1623 - Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics.

O. ASTM D1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films.

P. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness.

Q. ASTM D2370 - Standard Test Method for Tensile Properties of Organic Coatings.

R. ASTM D4073/D4073M - Standard Test Method for Tensile-Tear Strength of Bituminous Roofing Membranes.

S. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable.

T. ASTM D5385/D5385M - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.

U. ASTM D6163/D6163M - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.

V. ASTM D6506/D6506M - Standard Specification for Asphalt Based Protection Board for Below-Grade Waterproofing.

W. ASTM D7877 - Standard Guide for Electronic Methods for Detecting and Locating Leaks in Waterproof Membranes.

X. ASTM D8231 - Standard Practice for the Use of a Low Voltage Electronic Scanning System for Detecting and Locating Breaches in Roofing and Waterproofing Membranes.

Y. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

Z. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.

AA. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

BB. ICC-ES AC29 - Acceptance Criteria for Cold, Liquid Applied, Below-Grade, Exterior Damp proofing and Waterproofing Materials.

CC. NRCA (WM) - The NRCA Waterproofing Manual.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide data for membrane, surface conditioner, flexible flashings, joint cover sheet, and joint and crack sealants.

C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.

D. Manufacturer's Certificate: Certify all Products meet, exceed requirements, Contract Documents. that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and acceptable installation temperatures.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Testing Firm's qualification statement.

I. Warranty Documentation:
   1. Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
   2. Submit installer's documentation that installation complies with warranty conditions for the field-applied waterproofing.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Work, this Section, minimum (20) Twenty Years documented experience.

B. Installer Qualifications: Company specializing in Work , this Section, minimum (15) Fifteen Years documented experience

C. Testing Firm Qualifications: Company specializing in Work, this Section and previously approved by both Owner's Representative and Manufacturer, performing Work, type specified and approved by Manufacturer.

1.06 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Construct mock up consisting of (10) Ten Square feet of Fluid applied waterproofing, as required to accurately represent construction, finished Work, this Section.

C. Locate as directed by Architect

D. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.07 FIELD CONDITIONS

A. Maintain ambient temperatures above 45) Forty Five degrees Fahrenheit, minimum (24) Twenty Four hours prior to commencing Work, this Section.

1.08 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Installer Warranty: Provide (20) Twenty Year Warranty, all Work, this Section.

C. Replace all defective Work, immediately.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hot Fluid Applied Waterproofing:
   1. American Hydrotech, Inc. www.hydrotechusa.com.
   2. Carlisle Coatings & Waterproofing, Inc. www.carlisleccw.com.
   3. W. R. Meadows, Inc. www.wrmeadows.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 ACCESSORIES

A. Surface Conditioner: only that type, compatible with membrane compound; as recommended by membrane Manufacturer.

B. Sealant for Joints and Cracks in Substrate: only that type compatible with waterproofing material and as recommended by waterproofing Manufacturer.

C. Brushed-On Coating: elastomeric coating that provides waterproofing, corrosion protection, and weather resistance.
   1. Coverage: Apply coating between 15 to 30 sq ft/gal to produce at least 40 to 120 mil, 0.040 to 0.12 inch thick coating.
   2. Products:
      a. NaturaSeal ;www.naturaseal.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all existing conditions, prior to beginning Work, this Section.

B. Confirm all substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.

C. Verify all substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.

D. Confirm any items penetrating surfaces to receive waterproofing are securely installed.

E. Where existing conditions are responsibility of another installer, notify Architect immediately of any unsatisfactory conditions.

F. Do not proceed with Work, this Section, until all unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect all adjacent surfaces from damage.

B. Thoroughly clean, prepare all surfaces scheduled to receive waterproofing, in full accordance with Manufacturer's written instructions.

C. Do not apply waterproofing to any surfaces unacceptable to waterproofing Manufacturer.

D. Fill all non moving joints,cracks only with filler compatible with waterproofing materials.

E. Seal all moving cracks with sealant and non rigid filler, using only those procedures recommended by sealant and waterproofing Manufacturers.

F. Prepare all building expansion joints at those locations delineated within Contract Documents.

G. Install cant strips, all inside corners.

3.03 INSTALLATION

A. Install waterproofing to specified minimum thickness in full accordance with manufacturer’s instructions and NRCA (WM) applicable requirements.

B. Apply primer or surface conditioner only at that rate recommended by Manufacturer.

C. At those joints, cracks less than 1/2 inch in width including joints between horizontal and vertical surfaces, apply (18) Eighteen inch wide strip of joint cover sheet.

D. At those joints from 1/2 inch to 1 inch in width, loop joint cover sheet down into joint between 1-1/4 inch to 1-3/4 inch, and extend sheet at least (8) Eight inches, either side of expansion joint.

E. Center joint cover sheet over joints, roll sheet into coating of waterproofing material and apply second coat over sheet extending at least (8) Eight inches beyond sheet edges.

F. Extend membrane over cants and up intersecting surfaces at membrane perimeter minimum (8) Eight inches above horizontal surface for first ply and (16) Sixteen inches at those subsequent plies laid in shingle fashion.

G. Apply extra thickness of waterproofing material at all corners, intersections and angles.

H. Apply foam waterproofing in passes of 4 inches, maximum for warmer substrates. Refer to manufacturer's application instructions for substrate ambient temperature requirements.

I. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.

J. Extend waterproofing material and flexible flashing into drain clamp flange, apply adequate coating of liquid membrane to ensure clamp ring seal, and coordinate with drain installation requirements, Contract Documents.

K. Seal membrane and flashings to adjoining surfaces.
   1. Install termination bar along all edges.
   2. Install counterflashing over all exposed edges.

3.04 PROTECTION

A. Do not permit traffic, any form, over Work, this Section.

B. **Protect all Work, this Section from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Thermal Insulation.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 - Miscellaneous Rough Carpentry.

1.03 DEFINITIONS

A. Mineral Fiber Material Composition: Insulation referred to as mineral fiber block, board, and blanket insulation is composed of fibers from mineral based substances such as rock, slag, or glass and processed from the molten state into fibrous form.
   1. Based on type of insulation substance, the material will be referred to as a mineral fiber when having a rock or slag base, and glass fiber with a glass or silica sand base, also considered a mineral.
   2. Insulation blankets are flexible units consisting of felted, bonded, or unbonded fibers formed into rolls or flat cut pieces referred to as batts; rolls are simply longer versions of batts.
   3. For additional information about mineral fiber and the various classification types, refer to the following reference standards; ASTM C553, ASTM C612, ASTM C665, and ASTM C726.

1.04 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. ASTM C165 - Standard Test Method for Measuring Compressive Properties of Thermal Insulations; 2023.

D. ASTM C240 - Standard Test Methods for Testing Cellular Glass Insulation Block; 2021.

E. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2023, with Editorial Revision (2024).

F. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.

G. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation; 2022.

H. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2024.

I. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2017).

J. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

K. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2025.

L. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

M. ASTM C726 - Standard Specification for Mineral Wool Roof Insulation Board; 2024.

N. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation; 2023.

O. ASTM C1224 - Standard Specification for Reflective Insulation for Building Applications; 2015 (Reapproved 2020).

P. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2025.

Q. ASTM C1313/C1313M - Standard Specification for Sheet Radiant Barriers for Building Construction Applications; 2013 (Reapproved 2019).

R. ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings; 2025.

S. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers; 2015 (Reapproved 2022).

T. ASTM C1667 - Standard Test Method for Using Heat Flow Meter Apparatus to Measure the Center-of-Panel Thermal Transmission Properties of Vacuum Insulation Panels; 2015.

U. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).

V. ASTM D1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2016 (Reapproved 2023).

W. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2025.

X. ASTM D2126 - Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging; 2025.

Y. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

Z. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

AA. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2026.

BB. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres; 2020.

CC. ASTM E1414/E1414M - Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum; 2021a.

DD. ASTM E2357 - Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies; 2025.

EE. ICC-ES AC220 - Acceptance Criteria for Sheet Radiant Barriers; 2010, with Editorial Revision (2013).

FF. ICC-ES AC239 - Acceptance Criteria for Termite-Resistant Foam Plastic; 2008, with Editorial Revision (2022).

GG. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2025.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Shop Drawings: Submit drawings that indicate location of joint or termination detail conditions.

D. Samples for Verification: Submit two samples in size illustrating insulation and as indicated on drawings.

E. ABAA Field Quality Control Submittals: Submit third party reports of testing and inspection required by ABAA QAP.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

H. ABAA Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

I. ABAA Installer Qualification: Submit documentation of current contractor accreditation and current installer certification. Keep copies of contractor accreditation and installer certification on project site during and after installation. Present on site documentation upon request.

1.06 QUALITY ASSURANCE

A. Air Barrier Association of America (ABAA) Quality Assurance Program (QAP); www.airbarrier.org.:
   1. Installer Qualification: Use accredited contractors, certified installers, evaluated materials, and third party field quality control audit.
   2. Manufacturer Qualification: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material manufacturer.

B. Air Barrier Association of America (ABAA) Evaluated Materials Program (EAP); www.airbarrier.org: Use evaluated materials from a single manufacturer regularly engaged in air barrier material manufacture. Use secondary materials approved in writing by primary material Manufacturer.

1.07 FIELD CONDITIONS

A. **Do not** install any insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.

B. Insulation at Perimeter of Foundation: Expanded polystyrene (EPS) board.

C. Insulation Inside Masonry Cavity Walls: Extruded polystyrene (XPS) board.

D. Insulation Inside Prefabricated Wall Panels: Extruded polystyrene (XPS) board.

E. Insulation Over Metal Stud Framed Walls, Continuous: Extruded polystyrene (XPS) carbon black board.

F. Insulation on Inside of Framed Walls with Exposed Facer Providing Interior Finish: Rigid cellular polyisocyanurate with exposed facers.

G. Insulation on Inside of Concrete and Masonry Exterior Walls: Extruded polystyrene (XPS) board.

H. Insulation in Metal Framed Walls: Batt insulation with integral vapor retarder.

I. Insulation Above Lay In Acoustical Ceilings: Batt insulation with no vapor retarder.

J. Insulation over Roof Deck: Vacuum insulated panel (VIP) board.

Insulation for Inverted Roof Systems: Vacuum insulated panel (VIP) board.

K. Insulation at Structural Connections: Rigid, high strength polyurethane.

2.02 FOAM BOARD, INSULATION MATERIALS

A. Expanded Polystyrene (EPS) Board Insulation: Comply with ASTM C578.
   1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   3. Complies with fire resistance requirements indicated on drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
   4. Board Size: 48 inch by 96 inch.
   5. Board Thickness: As delineated within Contract Documents.

6. Board Edges: Square.
7. Water-Resistive Barrier: Integrated film facer on insulation.
8. Type and Compressive Resistance: Type XI, 5 psi (35 kPa), minimum.
9. Type and Water Absorption: Type XI, 4.0 percent by volume, maximum, by total immersion.
10. Type and Thermal Resistance, R-value: Type XI, 3.1 (0.55), minimum, per 1 inch thickness at 75 degrees F mean temperature.
11. Products:
    a. Atlas Molded Products, a Division of Atlas Roofing Corporation; ThermalStar EPS Wall Insulation Board: www.atlasmoldedproducts.com.
    b. Atlas Molded Products, a Division of Atlas Roofing Corporation; ThermalStar EPS Laminated Wall Insulation (LWI): www.atlasmoldedproducts.com.
    c. Diversifoam Products: www.diversifoam.com.
    d. InsulFoam LLC: www.insulfoam.com.
    e. InsulFoam LLC; R-Tech Fanfold (FF) Insulation:www.insulfoam.com.
    f. InsulFoam LLCwww.insulfoam.com.
    g. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Termite Resistant Expanded Polystyrene (EPS) Board Insulation: Fully comply with ASTM C578.
1. Termite Resistance: Fully comply with ICC-ES AC239.
2. Flame Spread Index (FSI): 25 or less, when tested in accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
4. Board Size: 48 inch by 96 inch.
5. Board Thickness: As delineated within Contract Documents.
6. Type and Compressive Resistance: Type XI, 5 psi (35 kPa), minimum.
7. Type and Thermal Resistance, R-value: Type XI, 3.1 (0.55), minimum, per 1 inch thickness at (75) Seventy Five degrees Fahrenheit mean temperature.
8. Board Edges: Square.
9. Products:
    a. Atlas Molded Products, a Division of Atlas Roofing Corporation; ThermalStar Below Grade EPS Insulation Board: www.atlasmoldedproducts.com.
    b. Nisus Corporation; Bora-Foam: www.nisuscorp.com.
    c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Extruded Polystyrene (XPS) Board Insulation: Comply with ASTM C578 with either natural skin or cut cell surfaces.
1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per (1) One thickness at (75) Seventy Five degrees Fahrenheit mean temperature.
5. Complies with fire resistance requirements indicated on drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
6. Board Edges: Square.
7. Type and Water Absorption: Type XII, 0.3 percent by volume, maximum, by total immersion.
8. Products:
    a. DuPont de Nemours: building.dupont.com.
    b. Kingspan Insulation LLC; GreenGuard GG25-LG XPS Insulation Board: www.kingspan.com.
    c. Owens Corning Corporation: www.ocbuildingspec.com.

d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Extruded Polystyrene (XPS) Continuous Insulation (CI) Board: Comply with ASTM C578, and manufactured using carbon black technology.
1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
4. Type and Thermal Resistance, R-value: Type IV, 5.6 (0.98), minimum, per 1 inch thickness at (75) Seventy Five degrees Fahrenheit mean temperature.
5. Complies with fire resistance requirements indicated on drawings as part of an exterior non load bearing exterior wall assembly when tested in accordance with NFPA 285.
6. Board Size: 48 inch by 96 inch.
7. Board Thickness: As delineated within Contract Documents.
8. Board Edges: Shiplap, at long edges.
9. Type and Water Absorption: Type IV, 0.3 percent by volume, maximum, by total immersion.
10. Products:
    a. DuPont de Nemours, Inc; Styrofoam Brand Ultra SL (Shiplap): building.dupont.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Extruded Polystyrene (XPS) Cavity Wall Insulation Board: Comply with ASTM C578, and manufactured using carbon black technology.
1. Type and Compressive Resistance: Type IV, 25 psi (173 kPa), minimum.
2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
4. Type and Thermal Resistance, R-value: Type IV, 5.6 (0.98), minimum, per 1 inch thickness at (75) Seventy Five degrees Fahrenheit mean temperature.
5. Complies with fire resistance requirements indicated on drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
6. Board Thickness: As delineated within Contract Documents.
7. Board Edges: Square.
8. Type and Water Absorption: Type IV, 0.3 percent by volume, maximum, by total immersion.
9. Products:
    a. DuPont de Nemours, Inc; Styrofoam Brand Cavitymate Ultra: building.dupont.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Expanded Graphite Polystyrene (GPS) Board Insulation: Comply with ASTM C578, Type I.
1. Flame Spread Index (FSI): Class B - 26 to 75, when tested in accordance with ASTM E84.
2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
3. Complies with fire resistance requirements indicated on drawings as part of an exterior non load bearing exterior wall assembly when tested in accordance with NFPA 285.
4. Board Edges: Square.
5. Water Absorption: 1.1 percent by volume, maximum.
6. Type and Compressive Resistance: Type I, 10 psi (69 kPa), minimum.
7. Thermal Resistance: R-value of Type I, 3.6 (0.63), minimum, per 1 inch at (75) Seventy Five degrees Fahrenheit mean temperature.
8. Products:
    a. BASF Corporation; Neopor Plus GPS: www.neopor.basf.us.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Rigid Thermoset Board Insulation: Fiber free phenolic insulation with zero Ozone Depletion Potential (ODP) blowing agent and faced on both sides with low emissivity composite foil.
   1. Flame Spread Index (FSI): Class B - 26 to 75, when tested in accordance with ASTM E84.
   2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   3. Comply with fire resistance requirements indicated on drawings as part of an exterior non load bearing exterior wall assembly when tested in full accordance with NFPA 285.
   4. Board Width, Nominal: 47-1/4 inch.
   5. Board Length, Nominal: 16 inch.
   6. Board Thickness, Nominal: As delineated within Contract Documents.
   7. Board Edges: Square.
   8. Water Absorption: 1.2 percent by volume, maximum.
   9. Compressive Strength: 15 psi (104 kPa), minimum.
   10. Thermal Resistance: R-value of 8.05, minimum, per inch at 75 degrees F, minimum, when tested according to ASTM C518.
   11. Products:
      a. Kingspan Insulation LLC; Kooltherm K15 Rainscreen Board: www.kingspan.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

H. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, fully comply with ASTM C1289.
   1. Classifications:
      a. Type I: Faced with aluminum foil on both major surfaces of the core foam.
         1) Class 1 - Non-reinforced core foam.
         2) Compressive Strength: 16 psi, minimum.
         3) Thermal Resistance, R-value: At 1-1/2 inch thick; 9.0, minimum, at (75) Seventy Five degrees Fahrenheit.
      b. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
         1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of core foam.
         2) Compressive Strength: Classes 1-2-3, Grade 1 - 16 psi (110 kPa), minimum.
         3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at (75) Seventy Five degrees Fahrenheit.
      c. Type III: Faced with perlite insulation board on one major surface of core foam and faced on the other major surface with any facer described in this specification.
         1) Compressive Strength: 16 psi, minimum.
         2) Thermal Resistance, R-value: At 1-1/2 inch thick; 7.0, minimum, at (75) Seventy Five degrees Fahrenheit.
      d. Type IV: Faced with a cellulosic fiber insulating board on one major surface of the core foam and faced on the other major surface with any facer described in this specification.
         1) Compressive Strength: 16 psi, minimum.
         2) Thermal Resistance, R-value: At 1-1/2 inch thick; 6.9, minimum, at (75) Seventy Five degrees Fahrenheit.
      e. Type V: Faced with oriented strand board (OSB) or plywood on one major surface of the core foam and faced on the other major surface with any facer described in this specification.
         1) Compressive Strength: 16 psi, minimum.
         2) Thermal Resistance, R-value: At 1-1/2 inch thick; 6.2, minimum, at (75) Seventy Five degrees Fahrenheit.
      f. Type VII: Faced with glass mat faced gypsum board on one major surface of the core foam and faced on the other major surface with any facer described in this specification.

1) Compressive Strength: 16 psi, minimum.
2) Thermal Resistance, R-value: At 1-1/2 inch thick; 7.0, minimum, at (75) Seventy Five degrees Fahrenheit.

2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in full accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in full accordance with ASTM E84.
4. Water Vapor Permeance: 1.2 perm, maximum, at 1 inch thickness, and when tested in accordance with ASTM E96/E96M, desiccant method.
5. Comply with fire resistance requirements indicated on drawings as part of an exterior non load bearing exterior wall assembly when tested in accordance with NFPA 285.
6. Board Size: 48 inch by 96 inch.
7. Board Thickness: As delineated within Contract Documents.
8. Tapered Board: Slope as indicated; minimum thickness, fabricate of fewest layers possible.
9. Board Edges: Square.
10. Products:
    a. Atlas Roofing Corporation; ACFoam Supreme Foil Faced Roof Insulation: www.atlasroofing.com.
    b. Atlas Roofing Corporation; EnergyShield CGF Pro Wall Insulation: www.atlasroofing.com.
    c. Carlisle Coatings & Waterproofing, Inc; R2+ Matte: www.carlisleccw.com.
    d. DuPont de Nemours, Inc; Thermax Light Duty NH: building.dupont.com.
    e. GAF; EnergyGuard Polyiso Insulation: www.gaf.com.
    f. GAF; EnergyGuard HD PLUS Polyiso Insulation: www.gaf.com.
    g. GAF; EnergyGuard NH Barrier Polyiso Roof Insulation: www.gaf.com.
    h. Hunter Panels; Xci Foil (Class A): www.hunterpanels.com.
    i. Johns Manville; AP Foil-Faced: www.jm.com.
    j. Ox Engineered Products; ISO Red Max (Polyiso Class A): www.oxengineeredproducts.com.
    k. Rmax Inc; ECOMAXci FR: www.rmax.com.
    l. Substitutions: Reference Section 0160 00 - Product Requirements for additional Content.

I. Rigid Cellular Polyisocyanurate (ISO) Thermal Insulation Board with Facers Both Sides and Providing Interior Finish System: Complying with ASTM C1289.
1. Classification: Type I - Faced with aluminum foil on both major surfaces of the core foam, and Class 2 - Glass fiber reinforced or non-reinforced core foam.
2. Compressive Strength: 16 psi, minimum.
3. Thermal Resistance, R-value: Type I, Class 2, at 1-1/2 inch thick; 9.0, minimum, at (75) Seventy Five degrees Fahrenheit.
4. Flame Spread Index (FSI): Class A - 0 to 25, when tested in full accordance with ASTM E84.
5. Smoke Developed Index (SDI): 450 or less, when tested in full accordance with ASTM E84.
6. Board Size: 48 inch by 96 inch.
7. Board Thickness: As delineated within Contract Documents.
8. Board Edges: Square.
9. Exposed Facer: 4 mil, 0.004 inch embossed white thermoset-coated aluminum.
10. Non Exposed Facer: 1.25 mil, 0.00125 inch embossed aluminum.
11. Water Absorption: 0.1 percent by volume, maximum, by total immersion.
12. Products:
    a. DuPont de Nemours, Inc; Thermax White Finish NH: building.dupont.com.

b. Substitutions: Reference Section 00 61 00 - Product Requirements for additional Content.

J. Rigid Cellular Polyisocyanurate (ISO) Thermal Insulation Board with Facers Both Sides: Complying with ASTM C1289.
1. Classifications:
a. Type I: Faced with aluminum foil on both major surfaces of core foam.
1) Class 2 - Glass fiber reinforced or non-reinforced core foam.
2) Compressive Strength: 16 psi, minimum.
3) Thermal Resistance, R-value: At 1-1/2 inch thick; 9.0, minimum, at 75 degrees F.
b. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of core foam.
2) Compressive Strength: Classes 1-2-3, Grade 1 - 16 psi (110 kPa), minimum.
3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at (75) Seventy Five degrees Fahrenheit.
2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
4. Fully comply with fire resistance requirements delineated within Contract Documents, as part of an exterior non load bearing exterior wall assembly when tested in full accordance with NFPA 285.
5. Board Size: 48 inch by 96 inch.
6. Board Thickness: As delineated within Contract Documents.
7. Board Edges: Square.
8. Products:
a. Atlas Roofing Corporation; ACFoam-II GRF Roof Insulation: www.atlasroofing.com.
b. Carlisle Coatings & Waterproofing, Inc; R2+ Matte: www.carlisleccw.com.
c. DuPont de Nemours, Inc; Thermax Metal Building Board: building.dupont.com.
d. GAF; EnergyGuard HD PLUS Polyiso Insulation: www.gaf.com.
e. Rmax Inc; ECOMAXci FR: www.rmax.com
f. Siplast; WALLcontrol Polyiso Foil-Faced Insulation: www.siplast.com.
g. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

K. Rigid Cellular Polyisocyanurate (ISO) Thermal Insulation Board with Facers Both Sides and Water-Resistive Barrier: Complying with ASTM C1289.
1. Classifications:
a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of the core foam.
2) Compressive Strength: Classes 1-2-3, Grade 1 - 16 psi (110 kPa), minimum.
3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at (75) Seventy Five degrees Fahrenheit.
2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in full accordance with ASTM E84.
4. Comply with fire resistance requirements indicated on drawings as part of an exterior non load bearing exterior wall assembly when tested in full accordance with NFPA 285.
5. Board Size: 48 by 96 inch.
6. Board Thickness: As delineated within Contract Documents.
7. Board Edges: Square.

8. Water Vapor Permeance: 1.2 perm, maximum, at 1 inch thickness, and when tested in full accordance with ASTM E96/E96M, desiccant method.
9. Products:
    a. Atlas Roofing Corporation; EnergyShield CGF Pro Wall Insulation: www.atlasroofing.com.
    b. DuPont de Nemours, Inc; Thermax Brand Insulation: building.dupont.com.
    c. Elevate; ISOGARD GL Insulation: www.holcimelevate.com.
    d. Elevate; Enverge CI Glass Exterior Wall Insulation: www.holcimelevate.com.
    e. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

L. Polyisocyanurate (ISO) Composite Board Insulation: Rigid cellular foam laminated to high-density cover board layer; comply with ASTM C1289.
1. Type IV ISO insulation layer laminated to 1/2-inch thick, high-density ISO cover layer.
2. Type II ISO Cover Layer, Compressive Strength: 80 psi (551 kPa).
3. Glass facers on both major surfaces.
4. Thermal Resistance, R-value: At 1-1/2 inch thick; 7.0, minimum, at (75) Seventy Five degrees Fahrenheit. 75 degrees F.
5. Flame Spread Index (FSI): Class A - 0 to 25, when tested in full accordance with ASTM E84.
6. Smoke Developed Index (SDI): 450 or less, when tested in full accordance with ASTM E84.
7. Water Vapor Permeance: Less than 1 perm when tested in fulaccordance with ASTM E96/E96M.
8. Board Thickness: As delineated within Contract Documents.
9. Board Edges: Square.
10. Products:
    a. Elevate; ISOGARD HD Composite: www.holcimelevate.com.
    b. GAF; Ultra HD Composite Insulation: www.gaf.com.
    c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

M. Polyisocyanurate (ISO) Cover Board Insulation: Rigid high density polyisocyanurate cover board; comply with ASTM C1289.
1. Type II ISO Cover Layer, Compressive Strength: 80 psi (551 kPa).
2. Glass facers on both major surfaces.
3. Thermal Resistance, R-value: At 1/2 inch thick; 2.5, minimum, at (75) Seventy Five degrees Fahrenheit.
4. Flame Spread Index (FSI): Class A - 0 to 25, when tested in full accordance with ASTM E84.
5. Smoke Developed Index (SDI): 450 or less, when tested in fullaccordance with ASTM E84.
6. Water Vapor Permeance: Less than 1 perm when tested in full accordance with ASTM E96/E96M.
7. Board Thickness: As delineated within Contract Documents.
8. Board Edges: Square.
9. Products:
    a. Elevate; ISOGARD HD Cover Board: www.holcimelevate.com.
    b. GAF; EnergyGuard NH HD Plus Polyiso Cover Board: www.gaf.com.
    c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

N. Rigid Cellular Polyisocyanurate (ISO) Thermal Insulation Board Faced with Plywood: Complying with ASTM C1289.
1. Classifications:

a. Type V: Faced with oriented strand board (OSB) or plywood on one major surface of the core foam and faced on the other major surface with any facer described in this specification.
    1) Compressive Strength: 16 psi, minimum.
    2) Thermal Resistance, R-value: At 1-1/2 inch thick; 6.2, minimum, at (75) Seventy Five degrees Fahrenheit.
2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in full accordance with ASTM E84.
3. Smoke Developed Index (SDI): 450 or less, when tested in ful accordance with ASTM E84.
4. Comply with fire resistance requirements delineated within Contract Documents, as part of an exterior non load bearing exterior wall assembly when tested in full accordance with NFPA 285.
5. Board Size: 48 inch by 96 inch
6. Plywood Thickness: As delineated within Contract Documents.
7. Insulation Board Thickness: As delineated within Contract Documents.
8. Board Edges: Square.
9. Products:
    a. Atlas Roofing Corporation; ACFoam Nail Base Nailable Roof Insulation: www.atlasroofing.com.
    b. Hunter Panels; Xci Ply: www.hunterpanels.com.
    c. Rmax Inc; ECOMAXci FR Ply: www.rmax.com.
    d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

O. Rigid Cellular Polyisocyanurate (ISO) Thermal Insulation Board Composite Ventilated with Wood Spacers and Faced with Oriented Strand Board (OSB) or Plywood: Provide with 1 inch thick wood spacers between foam and OSB or plywood; complying with ASTM C1289.
1. Classifications:
    a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
        1) Class 1 - Faced with glass fiber reinforced cellulosic facers on both major surfaces of the core foam.
        2) Compressive Strength: Classes 1-2-3, Grade 1 - 16 psi (110 kPa), minimum.
        3) Thermal Resistance, R-value: At 1-1/2 inch thick; Class 1, Grades 1-2-3 - 8.4 (1.48), minimum, at (75) Seventy Five degrees Fahrenheit.
2. Top Layer Material: 7/16 inch oriented strand board.
3. Comply with fire resistance requirements delineated within Contract Documents, as p indicated on drawingsart of an exterior non load bearing exterior assembly when tested in accordance with NFPA 285.
4. Board Size: 48 by 96 inch.
5. Composite Insulation Board Thickness: As delineated within Contract Documents.
6. Board Edges: Square.
7. Products:
    a. Atlas Roofing Corporation; ACFoam CrossVent Cross Ventilated Roof Insulation: www.atlasroofing.com.
    b. GAF; ThermaCal Nail Base Roof Insulation Panels: www.gaf.com.
    c. Hunter Panels: www.hunterpanels.com.
    d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

P. Rigid Cellular Polyisocyanurate (ISO) Thermal Insulation Board Composite Faced with Oriented Strand Board (OSB) or Plywood: Complying with ASTM C1289.
1. Classifications:

a. Type V: Faced with oriented strand board (OSB) or plywood on one major surface of core foam and faced on the other major surface with any facer described in this specification.
1) Compressive Strength: 16 psi, minimum.
2) Thermal Resistance, R-value: At 1-1/2 inch thick; 6.2, minimum, at (75) Seventy Five degrees Fahrenheit.

2. Top Layer Material: 7/16 inch (11 mm) oriented strand board (OSB).
3. Comply with fire resistance requirements indicated on drawings as part of an exterior non load bearing exterior wall assembly when tested in accordance with NFPA 285.
4. Board Size: 48 by 96 inches nominal.
5. Composite Insulation Board Thickness: As delineated within Contract Documents.
6. Board Edges: Square.
7. Products:
a. Atlas Roofing Corporation; ACFoam Nail Base Nailable Roof Insulation: www.atlasroofing.com.
b. Elevate; HailGard Composite Board: www.holcimelevate.com.
c. Elevate; ISOGARD HG Composite Insulation: www.holcimelevate.com.
d. Hunter Panels: www.hunterpanels.com.
e. Rmax Inc; ECOMAXci FR Ply: www.rmax.com.
f. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

Q. Cellular Glass Thermal Insulation Board: Fullyomplying with ASTM C552, Type IV, Grade 6 with the following characteristics:
1. Flame Spread Index: 5 or less, when tested in full accordance with ASTM E84.
2. Smoke Developed Index: 0, when tested in full accordance with ASTM E84.
3. Board Size: 18 by 24 inches, nominal.
4. Board Thickness: As delineated within Contract Documents.
5. Board Edges: Square.
6. Apparent Thermal Conductivity: K-value of 0.31 Btu inch/hr sq ft degrees F, minimum, at 75 degrees F mean temperature.
7. Compressive Strength: 72 psi, minimum, in full accordance with ASTM C240 test methods.
8. Water Absorption: 0.1 percent by volume, maximum.
9. Top Surface Facing: Unfaced.
10. Bottom Surface Facing: Unfaced.
11. Products:
a. Owens Corning Corporation:FOAMGLAS: www.ocbuildingspec.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

R. Cellular Polyurethane Thermal Break Board Insulation: High strength closed cell structure board with following characteristics.
1. Flame Spread Index: 5 or less, when tested in full accordance with ASTM E84.
2. Smoke Developed Index: 0, when tested in full accordance with ASTM E84.
3. Board Size: 48 by 96 inches.
4. Board Thickness: As delineated within Contract Documents.
5. Board Edges: Square.
6. Thermal Resistance: R-value of 3.85 per inch, minimum, at (75) Seventy Five degrees Fahrenheit minimum, in fulll accordance with ASTM C518 test methods.
7. Apparent Thermal Conductivity: K-value of 0.26 Btu inch/hr sq ft degrees F, minimum, in full accordance with ASTM C518 test methods.
8. Compressive Strength: 210 psi, minimum, in full accordance with ASTM D1621 test methods.

9. Compressive Modulus: 6,155 psi, minimum, in accordance with ASTM D1621 test methods.
10. Water Absorption: 0.5 percent by volume, maximum.
11. Products:
    a. Armatherm; 500-080 Structural Thermal Break Material: www.armatherm.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

S. Rigid Vacuum Insulated Panels (VIP): Microporous core, evacuated, encased, and sealed in thin, gas tight envelope. Accompany panels with infill panels around skylights and other roof penetrations.
1. Panel Width: 11.8 to 23.6 inches.
2. Panel Length: 11.8 to 47.2 inches.
3. Panel Thickness: As delineated within Contract Documents.
4. Compressive Strength: ASTM C165, 23 psi at 10 percent deformation.
5. Service temperature: Minus (40) Forty degrees to (176) One hundred seventy six degrees Fahrenheit.
6. Thermal resistance in accordance with ASTM C1667. Center panel values as follows:
    a. Insulation Thickness: 0.79 inch, R-value of 26.
7. Calculated edge effect thermal resistance properties in fullaccordance ASTM C1667.
    a. Insulation Thickness: 0.79 inch, R-value of 22.
8. Dimensional Stability: ASTM D2126, 336 hours at (70) Seventy degrees Fahrenhett and 97 percent relative humidity.
    a. Thickness: 0.79 inch.
        1) Length: Minus 0.47 percent.
        2) Width: Minus 0.59 percent.
    b. Thickness: 1.97 inch.
        1) Length: Minus 0.30 percent.
        2) Width: Minus 0.13 percent.
9. Nominal Panel Mass:
    a. Thickness: 0.79 inch; 0.82 psf.
10. Products:
    a. Kingspan Insulation LLC; Optim-R Vacuum Insulated Panels: www.kingspan.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.03 MINERAL FIBER BOARD, INSULATION MATERIALS

A. Mineral Wool Roof Insulation Boards: Comply with ASTM C726, with high density top layer. Mold and microbial growth resistant.
1. Face Coating: None, unfaced.
2. Flame Spread Index: Zero, when tested with or without facing, in full accordance with ASTM E84.
3. Smoke Developed Index: Zero, when tested with or without facing, in full accordance with ASTM E84.
4. Board Size: 48 by 48 inches.
5. Board Thickness: As delineated within Contract Documents.
6. Board Edges: Square.
7. Thermal Conductivity (k-factor): Btu inch/hr sq ft degrees F of 3.8 per inch, minimum, at (75) Seventy Five degrees Fahrenheit when tested in accordance with ASTM C518.
8. Top Layer Density: 13.75 pcf, nominal.
9. Bottom Layer Density: 9.36 pcf for thicknesses greater than 2-1/2 inches.
10. Products:
    a. ROCKWOOL; TOPROCK DD (Dual Density) Flat Roof Insulation: www.rockwool.com.

b. ROCKWOOL; TOPROCK DD Plus (Dual Density) Bitumen-Coated Flat Roof Insulation: www.rockwool.com.
c. ROCKWOOL; MULTIFIX (Dual Density) Glass Fiber Coated Flat Roof Insulation: www.rockwool.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Mineral Wool Block and Board Thermal Insulation: Fully complying with ASTM C612.
1. Facing: None, unfaced.
2. Flame Spread Index: 25 or less, when tested with facing, if any, in full accordance with ASTM E84.
3. Smoke Developed Index: 50 or less, when tested with facing, if any, in full accordance with ASTM E84.
4. Board Size: 48 by 48 inches.
5. Board Thickness: As delineated within Contract Documents.
6. Board Edges: Square.
7. Thermal Conductivity (k-factor): Btu inch/hr sq ft degrees F of 0.26 per inch, minimum, at (75) Seventy Five degrees Fahrenheit when tested in full accordance with ASTM C518.
8. Maximum Density: 8 pcf, nominal.
9. Products:
a. CertainTeed Corporation: www.certainteed.com.
b. Johns Manville: www.jm.com.
c. Owens Corning Corporation: www.ocbuildingspec.com.
d. ROCKWOOL; COMFORTBOARD 80: www.rockwool.com.
e. ROCKWOOL; COMFORTBOARD 110: www.rockwool.com.
f. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Mineral Wool Block, Board, or Blanket Thermal Insulation: Fully complying with ASTM C612 or ASTM C553.
1. Where indicated, provide foil facing on one side; with flame spread index of 25 or less, when tested in full accordance with ASTM E84.
2. Where indicated, provide fiberglass reinforced polypropylene facing on one side; with flame spread index of 25 or less, when tested in full accordance with ASTM E84.
3. Where indicated, provide black, non-woven fiberglass facing on one side; with flame spread index of 25 or less, when tested in full accordance with ASTM E84.
4. Where indicated, provide black, mineral fiber facing on one side; with flame spread index of 25 or less, when tested in full accordance with ASTM E84.
5. Smoke Developed Index: 450 or less, when tested in full accordance with ASTM E84.
6. Board Size: 16 by 48 inches.
7. Board Thickness: As delineated within Contract Documents.
8. Thermal Resistance: R-value of 4.2 per inch at (75) Seventy Five degrees Fahrenheit, minimum, when tested in full accordance with ASTM C518.
9. Maximum Density: 8 pcf, nominal.
10. Products:
a. Johns Manville CladStone Water & Fire Block Insulation: www.jm.com.
b. Johns Manville; MinWool Safing: www.jm.com.
c. ROCKWOOL; CAVITYROCK: www.rockwool.com.
d. ROCKWOOL; ROXUL SAFE 55: www.rockwool.com.
e. ROCKWOOL; ROCKWOOL PLUS MB: www.rockwool.com.
f. Specialty Products & Insulation (SPI); PG Board TAF: www.spi-co.com.
g. Thermafiber, Inc. RainBarrier: www.thermafiber.com.
h. Thermafiber, Inc. FireSpan: www.thermafiber.com.
i. Thermafiber, Inc; Safing: www.thermafiber.com.

j. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 MINERAL FIBER BLANKET, INSULATION MATERIALS

A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, fully complying with ASTM C665; friction fit.
   1. Flame Spread Index: 75 or less, when tested in full accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in full accordance with ASTM E84.
   3. Combustibility: Non combustible, when tested in full accordance with ASTM E136, except for facing, if any.
   4. Formaldehyde Content: Zero.
   5. Facing: Aluminum foil, flame spread 25 rated; one side.
   6. Facing: Aluminum foil, one side.
   7. Products:
      a. CertainTeed Corporation: www.certainteed.com.
      b. Johns Manville: www.jm.com.
      c. Owens Corning Corporation: www.ocbuildingspec.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Mineral Wool Blanket Thermal Insulation: Flexible or semi-rigid preformed insulation, complying with ASTM C665.
   1. Flame Spread Index: 25 or less, when tested in full accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in full accordance with ASTM E84.
   3. Provide foil facing as delineated within Contract Documents.
   4. Products:
      a. Johns Manville; MinWool Sound Attenuation Fire Batts: www.jm.com.
      b. ROCKWOOL; COMFORTBATT: www.rockwool.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for aditional Content.

C. Mineral Fiber Enclosure for Recessed Ceiling Fixtures: Insulated box enclosure with foil facing on exterior side for placement over recessed ceiling light fixture; flame spread index of 25 or less, and smoke development index of 450 or less when tested in accordance with ASTM E84.
   1. Light Fixture Size: As delineated within Contract Documents.
   2. Insulation Thickness: As delineated within Cotract Documents
   3. Thermal Resistance: R-value of 4.2 per inch, minimum, at (75) Seventy Five degrees Fahrenheit, minimum, when tested full according to ASTM C518.
   4. Provide enclosure with documented noise reduction coefficient (NRC) in full accordance with ASTM C423 of at least 1.00 at 2 inches thick.
   5. Provide enclosure with documented ceiling attenuation class (CAC) in full accordance with ASTM E1414/E1414M.
   6. Products:
      a. Specialty Products & Insulation (SPI); SafeLite: www.spi-co.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.05 INSULATING COATING, MATERIALS

A. Acrylic Insulating Coating: Fluid applied, acrylic insulating coating that when applied to various substrates provides thermal protection and corrosion resistance.
   1. Substrate: As delineated within Contract Documents.
   2. Primer: As recommended by coating manufacturer for applied substrate.
   3. Number of Coatings: Two.
   4. Topcoat: As recommended by coating manufacturer.
   5. Solids by Volume: At least 76 percent.
   6. Dry Film Thickness (DFT): 30 to 40 mil, 0.030 to 0.040 inch, minimum, per coat.

7. Surface Burning Characteristics: Smoke developed index of 450 or less, and flame spread index of 25 or less, Class A, when tested in full accordance with ASTM E84.
8. Temperature Resistance, Fully Cured: At least (325) Three Hundred Twenty Five degrees Fahrenheit, in coordination with type of substrate and primer being used.
9. Sheen: Flat or matte finish, without topcoat.
10. Color: As selected by Architect from Manufacturer's full range of options.
11. Products:
    a. Pittsburgh Paints; Hi-Temp 808: www.ppgpaints.com.
    b. Tnemec Company, Inc; Series 971 Aerolon Acrylic: www.tnemec.com.
    c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.06 REFLECTIVE, INSULATION MATERIALS

A. Reflective Insulation: Multilayer insulation sheet that opens upon installation with internal expanders creating reflective air space in full accordance with ASTM C1224.
1. Application: As delineated within Contract Documents.
2. Product Type: Solid, nonperforated.
3. Cavity Depth: 3/4 inch, provide applicable furring strips.
4. Water Vapor Permeance: 0.018 perm, when tested in full accordance with ASTM E96/E96M.
5. Surface Burning Characteristics: Smoke developed index of 450 or less, and flame spread index of 25 or less, Class A, when tested in full accordance with ASTM E84.
6. Thermal Resistance: R-value of 4.1 per cavity depth indicated at (75 Seventy Five degrees Fahrenheit when tested in fulll accordance with ASTM C518.
7. Reflectivity: 96 percent in full accordance with ASTM E903.
8. Foil Thermal Emittance: 0.05, maximum, when tested in full accordance with ASTM C1371.
9. Mold and Mildew Resistance: Zero growth when tested in full accordance with ASTM C1338.
10. Tabs, Strips, Seam and Perimeter Tape: As recommended by sheet Manufacturer.
11. Products:
    a. Fi-Foil Company, Inc; Flex Foam Reflective Insulation: www.fifoil.com.
    b. Fi-Foil Company, Inc; AA2 Vapor Shield Reflective Insulation: www.fifoil.com.
    c. Fi-Foil Company, Inc; M-Shield Reflective Insulation: www.fifoil.com.
    d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

B. Reflective Bubble Insulation: Multilayer insulation sheet held open with single bubble creating reflective air space in accordance with ASTM C1224.
1. Application: As delineated within Contract Documents.
2. Facing: Reflective metal film on both sides.
    a. Polyethylene colored white.
3. Water Vapor Permeance: 0.010 perm, when tested in full accordance with ASTM E96/E96M.
4. Surface Burning Characteristics: Smoke developed index of 450 or less, and flame spread index of 25 or less, Class A, when tested in full accordance with ASTM E84.
5. Thermal Resistance: R-value of 3.4 with heat flow up and configuration indicated for reflective bubble insulation.
6. Foil Thermal Emittance: 0.06, maximum, when tested in full accordance with ASTM C1371.
7. Mold and Mildew Resistance: Zero growth when tested in full accordance with ASTM C1338.
8. Tabs, Strips, Seam and Perimeter Tape: As recommended by sheet Manufacturer.
9. Products:
    a. Fi-Foil Company, Inc; RBI Shield (Reflective Bubble Insulation): www.fifoil.com.

b. Substitutions: Reference Section 0160 00 - Product Requirements for additional Content.

2.07 RADIANT BARRIER, INSULATION MATERIALS

A. Radiant Barrier Insulation: Multilayer, perforated, radiant barrier with outer layers of aluminum sheet on both sides of woven polyethylene in full accordance with ICC-ES AC220 and ASTM C1313/C1313M.
   1. Application: Apply as indicated on drawings.
   2. Water Vapor Permeance: Greater than 1.0 and less than 10, Class III, when tested in full accordance with ASTM E96/E96M.
   3. Surface Burning Characteristics: Smoke developed index of 450 or less, and flame spread index of 25 or less, Class A, when tested in full accordance with ASTM E84.
   4. Foil Thermal Emittance: 0.05, maximum, when tested in full accordance with ASTM C1371.
   5. Mold and Mildew Resistance: Zero growth when tested in full accordance with ASTM C1338.
   6. Tabs, Strips, Seam and Perimeter Tape: As recommended by sheet Manufacturer.
   7. Products:
      a. Fi-Foil Company, Inc; Radiant Shield Two-Sided Radiant Barrier: www.fifoil.com.
      b. Substitutions: Reference Section 01 670 00 - Product Requirements for additional Content.

B. Radiant Barrier and Insulation Facing: Aluminum foil facing bonded to natural kraft paper and reinforced with multi-directional fiberglass scrim in accordance with ICC-ES AC220 and ASTM C1313/C1313M.
   1. Application: As delineated within Contract Documents.
   2. Water Vapor Permeance: 0.020 perm, when tested in full accordance with ASTM E96/E96M.
   3. Tensile Strength: In full accordance with ASTM C1136.
      a. Machine Direction: 40 lb per 1 inch width.
      b. Cross Direction: 25 lb per 1 inch width.
   4. Temperature Resistance: No cracking or delamination within temperature range of minus (40) Forty degrees to (240) Two Hundred Forty degrees Fahrenheit, in full accordance with ASTM D1970/D1970M.
   5. Mold and Mildew Resistance: Zero growth when tested in full accordance with ASTM C1338.
   6. Tabs, Strips, Seam and Perimeter Tape: As recommended by sheet Manufacturer.
   7. Products:
      a. Fi-Foil Company, Inc; FSK Shield Class A Insulation Facing/Vapor Retarder: www.fifoil.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.08 ACCESSORIES

A. Sheet Vapor Retarder: Black polyethylene film for above grade application, 10 mil, 0.010 inch thick.

B. Sheet Vapor Retarder: Black polyethylene film reinforced with glass fiber square mesh.

C. Interior Vapor Retarder: Modified polyethylene/polyacrylate (PE/PA) film reinforced with polyethylene terephthalate (PET) fibers, 12 mil, 0.012 inch thick.
   1. Width: As delineated within Contract Documents.
   2. Products:
      a. SIGA Cover Inc; SIGA-Majrex 200: www.siga.swiss/global_en.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
   1. Application: Sealing of interior circular penetrations, such as pipes or cables.
   2. Width: Are required for application.
   3. Temperature Resistance: Range of minus (40) Forty to (212) Two hundred twelve degrees Fahrenheit.
   4. Products:
      a. SIGA Cover Inc; SIGA-Rissan: www.siga.swiss/global_en.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Self Adhered Transition Flashing: Multipurpose, self adhered flashing with modified butyl adhesive, polyester fiber top sheet, and polypropylene interlayer.
   1. Application: Primerless adhesion for use as through wall flashings and wall transitions to roof and below grade systems.
   2. Thickness: As delineated within Contract Documents.
   3. Size: 6 inches wide, in rolls (75) Seventy Five feet long
   4. Tensile Strength: Greater than 1,300 psi fully complying with ASTM D412 test method.
   5. Products:
      a. DuPont de Nemours, Inc; DuraGard CM Transition Flashing: building.dupont.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Flashing Tape: Special reinforced film with high performance adhesive.
   1. Application: Window and door opening flashing tape.
   2. Width: As required for application.
   3. Primer: Tape Manufacturer's recommended product.
   4. Products:
      a. Protecto Wrap Company; Protecto Super Stick Building Tape: www.protectowrap.com.
      b. Protecto Wrap Company; Protecto Seal 45 Butyl: www.protectowrap.com.
      c. Protecto Wrap Company; Protecto BT25XL: www.protectowrap.com
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Conent.

G. Sill Plate Sealer: Closed cell foam tape with rubberized adhesive membrane; bridges gap between foundation structure and sill plate or skirt board.
   1. Width: As delineated within Contract Documents. 5-1/2 inches
   2. Ultraviolet (UV) and Weathering Resistance: Approved in writing by Manufacturer for up to (90) Ninety calendar days of weather exposure.
   3. Products:
      a. Protecto Wrap Company; Triple Guard Energy Sill Sealer: www.protectowrap.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

H. Tape: Bright aluminum self adhering type, mesh reinforced, (4) Four inches wide.
   1. Products:
      a. Rmax Inc; R-SEAL 3000: www.rmax.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Tape joints of rigid insulation in full accordance with roofing and insulation Manufacturers' instructions.

J. Liquid Flashing: Single component, nonsag flashing and weather barrier sealant.
   1. Products:
      a. Rmax Inc; R-SEAL 2000 LF: www.rmax.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

K. Air and Moisture Sealing Insulation Fasteners: Preassembled fastener units consisting of sealing washer, screw, and gasketing tube.
   1. Length as required for thickness of insulation material and penetration of deck substrate.
   2. Thread and tip types as required for substrate material.
   3. Products:
      a. TruFast Walls, a Division of Altenloh, Brinck & Co. US, Inc; Grip-Deck TubeSeal: www.trufastwalls.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

L. Infill Strips:
   1. High performance insulation, PIR or XPS.
      a. Thickness: As delineated within Contract Documents.
      b. Minimum R-value: 22.
   2. Products:
      a. Kingspan Insulation LLC; Optim-R Vacuum Insulated Panels: www.kingspan.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

M. Mineral Wool Insulation Attachment:
   1. Products:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

N. Rigid Insulation Pronged Attachment Washers: Solid plastic cap washer with prongs and flexible perimeter seal attached with screws to substrate for attachment of rigid insulation and to help seal against air and moisture penetration through weather barrier assembly.
   1. Products:
      a. TruFast Walls, a Division of Altenloh, Brinck & Co. US, Inc; Thermal-Grip ci Prong Washer: www.trufastwalls.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

O. Gas Actuated Insulation Fasteners: Galvanized steel pins driven through polypropylene anchor with 2-1/4-inch diameter washer head; suitable for fastening insulation to concrete, CMU, or steel studs, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
   1. Products:
      a. TruFast Walls, a Division of Altenloh, Brinck & Co. US, Inc; Thermal-Grip Insulation Pin: www.trufastwalls.com.
      b. Substitutions: Reference Setion 01 60 00 - Product Requirements for additional Content.

P. Insulation Fasteners: Lengths of unfinished, 13-gauge, 0.072-inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

Q. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

R. Insulation Fasteners: Appropriate for purpose intended.
   1. Length as required for thickness of insulation material and penetration of deck substrate.

S. Support for Continuous Rigid Insulation:
   1. Fastening Clips: Two piece PVC insulation clips with retainer and T-shaped clips mechanically fastened to surface receiving insulation, depth to suit insulation thickness, capable of securely and rigidly fastening insulation in place.
      a. Manufacturers:

1) Victory Bear; Flex-Tite Insulation Clips: www.victorybear.com.
2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2. Finishing Clips: J-shaped PVC channels mechanically fastened to surface at horizontal edges of insulation, depth to suit insulation thickness, capable of securely and rigidly fastening insulation in place.
   a. Manufacturers:
      1) Victory Bear; J-Channel: www.victorybear.com.
      2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

T. Support for Cladding and Continuous Insulation: Reference Contract Documents for additional Content.

U. Support for Cladding and Continuous Insulation: Thermal clips.
   1. Thermally broken clips that provide attachment support for girts, angles, channels, and other cladding support framing.
   2. Thermal Spacer Clip: Polyamide resin.
   3. Thermal Spacer Clip: Pultruded glass fiber and thermoset polyester resin.
   4. Thermal Spacer Clip: Pultruded glass fiber and thermoset polyester resin clip; 3/16 inch thick at top, base, and web.
   5. Galvanized Steel Support Clip: 14 gauge, 0.0747 inch, G90/Z275 galvanized support clip complying with ASTM A653/A653M, with integral glass fiber reinforced polyamide thermal isolator pad.
   6. Stainless Steel Support Clip: 16 gauge, 0.0625 inch Type 304 stainless steel, with thermal isolator pad.
   7. Clip Depth: As required for thickness of insulation.
   8. Spacing of Clips: 16 inches on center, vertically.
   9. Fasteners: As recommended by clip Manufacturer.
   10. Products:
      a. Advanced Architectural Products, LLC; SMARTci GREENGirt Clips - Thermal Spacer series: www.GreenGirt.com.
      b. Cascadia Windows & Doors; Cascadia Clip: www.cascadiawindows.com.
      c. Northern Facades; ISO Clip: www.northernfacades.com.
      d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

V. Support for Cladding and Continuous Insulation: Continuous thermal Z-girts.
   1. Fiberglass reinforced plastic (FRP) girts that provide cladding attachment support for exterior wall cladding, brick veneer, CMU veneer, metal wall panels and siding.
   2. Depth: As required for thickness of insulation.
   3. Length: 6 inches for clips and 96 inches for girts.
   4. Spacing: 16 inches on center, vertically.
   5. Fasteners: As recommended by clip Manufacturer.
   6. Products:
      a. Advanced Architectural Products, LLC; SMARTci 3 in 1 System: www.GreenGirt.com.
      b. Advanced Architectural Products, LLC; SMARTci 2 in 1 System: www.GreenGirt.com.
      c. Armatherm; Z Girt Structural Thermal Break: www.armatherm.com.
      d. Cladiator; Slotted-Z FG: www.cladiator.com.
      e. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

W. Support for Cladding and Continuous Insulation: Thermal clip and rail.
   1. Thermal Clips: Pultruded fiberglass resin allowing field adjustment and alignment of rails.

2. Thermal Clips: Extruded aluminum, with thermal spacer at base and slot at top to allow field adjustment and alignment of rails.
    a. Single Width: 2-15/16-inch wide bracket.
    b. Double Width: 5-7/8-inch wide bracket.
    c. Range of Height Adjustment: 1.85 to 2.64 inches.
    d. Thermal Spacer: Prefastened flame retardant polypropylene copolymer isolator at base of brackets.
3. Extruded vertical and horizontal aluminum rails.
4. Vertical Rail: Cladding support, extruded aluminum with 0.094-inch minimum thickness and 118-1/8 inches long; attached to bracket.
    a. L Rail: 2-3/8-inch long leg and 1-9/16-inch short leg.
    b. T Rail: 2-3/8-inch long leg and 3-15/16-inch wide face.
    c. Omega Rail: 1-inch wide and deep opening and 4-3/4-inch overall width.
    d. Z Rail: 1-3/4-inch wide top, 1-inch deep vertical and 1-3/16-inch wide bottom.
5. Horizontal Rail: Cladding support, extruded aluminum with 0.094-inch minimum thickness and unique profile, 118-1/8 inches long; attached to vertical rail.
6. Fasteners: Provide support system and cladding attachment fasteners as recommended by system manufacturer in full accordance with requirements.
7. Products:
    a. Cladiator; CL 300: www.cladiator.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

X. Support for Cladding and Continuous Insulation: Horizontal self-shimming, adjustable aluminum framing system thermally isolated from building substrate. Noncombustible; fully comply with NFPA 285.
1. Substrate: As delineated within Contract Documents.
2. Wall Brackets: Extruded aluminum, with predrilled slots and holes to allow for side to side and in and out field adjustment of bracket to horizontal track attachment. Provide aluminum alloy 6063-T66, or equivalent grade.
    a. Bracket Width: 1-5/8 inches.
    b. Depth Range: As delineated within Contract Documents.
    c. Flame Spread Index (FSI): Class A, when tested in full accordance with ASTM E84.
    d. Thermal Spacer: Expanded PVC isolator at base of brackets, sized to fully fit bracket base with 1/8-inch minimum thickness.
3. Horizontal Carrier Track: Cladding support; extruded aluminum with 0.094-inch minimum thickness and 120 inches length; attached to bracket. Provide aluminum alloy 6005-T5 or equivalent grade.
    a. L Type Shape Track: 1-15/16-inch long leg and 1-9/16-inch short leg.
    b. T Type Shape Track-Small: 1-15/16-inch long leg and 1-9/16-inch side to side leg.
    c. T Type Shape Track-Large: 1-15/16-inch long leg and 3-15/16-inch sideside leg.
    d. Finish: Provide mill finish that complies with AAMA 611.
4. Horizontal Rails: Cladding support rails; extruded aluminum with 0.080-inch minimum thickness and 120 inches long; field-attach to opposite rail orientation.
    a. Hat Shape: 1-inch depth and 5-1/8-inch overall width.
    b. Z-Shape: 1-inch depth and 3-1/4-inch overall width.
    c. Concealed C Type Clip and Rail: 1-inch depth and 2-inch overall height.
    d. Finish: Provide mill finish that complies with AAMA 611.
5. Fasteners: Provide support system and cladding attachment fasteners as recommended by system manufacturer in accordance with requirements. Provide materials and engineering from same source.
6. Products:
    a. exo Surfaces; exoFRAMING Subframe System: www.exo-surfaces.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

Y. Nails or Staples: Steel wire; electroplated or galvanized; type and size to suit application.

Z. Wire Mesh: Galvanized steel, hexagonal wire mesh.

AA. Protection Board for Below Grade Insulation: Cementitious, 1/4 inch thick.

BB. Adhesive: Type recommended by insulation Manufacturer for this particular application.

CC. Adhesive: Gun grade, interior and exterior, and compatible with insulation and substrates; complies with ASTM C557.
1. Application Temperature: (40) Forty to (100) One hundred degrees Fahrenheit, at contact surfaces.
2. Volatile Organic Content (VOC): Less than (7) Seven percent by weight.

DD. Adhesive: Vapor retarder type, trowel consistency; fire retardant, compatible with insulation and substrate, complying with the following:
1. Initial Set: four hours.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** substrates, adjacent materials and insulation materials are fully dry and all substrates are ready to receive Work, this Section.

B. **Confirm all** substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION, FOUNDATION PERIMETER

A. Adhere a (8) eight inch wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
1. Tape seal joints.
2. Extend sheet full height of joint.

B. Apply adhesive to back of boards:
1. Three continuous beads per board length.
2. Full bed 1/8 inch thick.

C. Install boards horizontally on foundation perimeter.
1. Place boards to maximize adhesive contact.
2. Install in running bond pattern.
3. Butt edges and ends tightly to adjacent boards and to protrusions.

D. Extend boards over expansion joints, unbonded to foundation on one side of joint.

E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

F. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.
1. Apply adhesive in (6) Six continuous beads per board length.
2. Install boards horizontally from base of foundation to top of insulation.
3. Butt boards tightly, with joints staggered from insulation joints.

3.03 BOARD INSTALLATION, EXTERIOR WALLS

A. Adhere 6 inches wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
1. Tape seal joints between sheets.
2. Extend sheet full height of joint.

B. Apply adhesive to back of boards:
1. Three continuous beads per board length.
2. Full bed 1/8 inch thick.

C. Install rigid insulation directly to steel studs or exterior grade sheathing at 16 inches on center with manufacturer recommended mechanical fasteners, and tape joints with manufacturer's minimum 4 inches wide sealant tape; fulcomply with ASTM E2357.

D. Install boards horizontally on walls.
   1. Place boards to maximize adhesive contact.
   2. Install in running bond pattern.
   3. Butt edges and ends tightly to adjacent boards and protrusions.

E. Extend boards over expansion joints, unbonded to wall on one side of joint.

F. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

G. Place (8) eight inch wide polyethylene sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frames, and tape seal in place to ensure continuity of vapor retarder and air seal.

H. Tape insulation board joints.

3.04 BOARD INSTALLATION, CAVITY WALLS

A. Secure insulation fasteners to substrate at following frequency:
   1. (6) Six per insulation board.

B. Adhere (8) eight inch wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
   1. Tape seal joints between sheets.
   2. Extend sheet full height of joint.

C. Apply adhesive to back of boards:
   1. Three continuous beads per board length.
   2. Full bed 1/8 inch thick.

D. Install boards to fit snugly between wall ties.
   1. Place membrane surface against adhesive.
   2. Place membrane surface facing out, and tape seal board joints.

E. Install boards horizontally on walls.
   1. Place boards to maximize adhesive contact.
   2. Install within running bond pattern.
   3. Butt edges and ends tightly to adjacent boards and protrusions.
   4. Place impale fastener locking discs.

F. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

G. Place 6 inches wide polyethylene sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frames, and tape seal in place to ensure continuity of vapor retarder and air seal.

3.05 BOARD INSTALLATION, CLADDING, CONTINUOUS INSULATION SUPPORTS

A. Install supports in full accordance with Manufacturer's written installation instructions.

B. Install supports in compliance with system orientation, sizes, and locations as indicated on drawings and in accordance with approved shop drawings.

C. Install supports to fill in exterior wall spaces without gaps or voids in insulation.

D. Trim insulation neatly to fit spaces and provide a continuous thermal layer.

3.06 BOARD INSTALLATION, UNDER CONCRETE SLABS

A. Place insulation under slabs on grade after base for slab has been compacted.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.07 BOARD INSTALLATION, OVER LOW SLOPE ROOF DECK

A. Installation of board insulation over low slope roof deck.

B. Board Installation Over Roof Deck, General:
   1. See applicable roofing specification section for specific board installation requirements.
   2. Ensure vapor retarder is clean and dry, continuous, and ready for application of roofing system.
   3. Fasten insulation to deck in accordance with roofing Manufacturer's written instructions and applicable Factory Mutual requirements.
   4. **Do not** apply more insulation than can be covered with roofing on the same day.

C. Vacuum Insulated Panel Installation:
   1. Use infill strips to make up spacing differences where runs of panels do not accurately fit roof dimensions. Ensure infill strips are same thickness as panels and accurately trimmed to active close-butting joints and continuity.
   2. Secure infill panels to roof substrate using suitable adhesive or tape.
   3. Install infill strips at roof perimeter, abutting penetrations.

3.08 BOARD INSTALLATION, STEEP SLOPE ROOF SHEATHING, ROOF STRUCTURE

A. Installation of board insulation over steep slope roof structure or roof sheathing.

3.09 BATT INSTALLATION

A. Install insulation and vapor retarder in full accordance with Manufacturer's written instructions.

B. Install in exterior wall and roof spaces without gaps or voids. **Do not** compress insulation.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

E. Install with factory-applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.

F. Staple or nail facing flanges in place at maximum 6 inches on center.

G. Tape insulation batts in place.

H. Retain insulation batts in place with spindle fasteners at 12 inches on center.

I. Retain insulation batts in place with wire mesh secured to framing members.

J. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.

K. At wood framing, place vapor retarder on warm side of insulation by stapling at 6 inches on center. Lap and seal sheet retarder joints over face of member.

L. At metal framing, place vapor retarder on warm side of insulation; lap and seal sheet retarder joints over face of member

M. Tape seal tears or cuts in vapor retarder.

N. Extend vapor retarder tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane; tape seal in place.

O. Coordinate all Workthis section with requirements for vapor retarder.

P. Coordinate all Workthis section with construction of air barrier seal.

3.10 FIELD QUALITY CONTROL

A. Reference Section 01 40 00 - Quality Requirements for additionl Content.

B. Coordination of Air Barrier Association of America (ABAA) Tests and Inspections:
   1. Provide testing and inspection required by ABAA Quality Assurance Program (QAP).
   2. Notify ABAA in writing of schedule for air barrier work, and allow adequate time for testing and inspection.
   3. Full cooperate with ABAA testing agency.

4. Allow access to air barrier work areas and staging.
5. **Do not** cover air barrier work until tested, inspected, and accepted.

3.11 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 07 24 00
EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior Insulation and Finish Systems.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold-Formed Metal Framing.

B. Section 06 10 53 - Miscellaneous Rough Carpentry.

C. Section 07 25 00 - Weather Barriers.

D. Section 07 62 00 - Sheet Metal Flashing and Trim.

E. Section 07 92 00 - Joint Sealants: Sealing joints between EIFS and adjacent construction and penetrations through EIFS.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"

A. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).

B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

C. ASCE 7-16 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2016.

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

E. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2026.

F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

H. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.

I. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).

J. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

K. ASTM C297/C297M - Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions; 2016 (Reapproved 2024).

L. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.

M. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

N. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2025.

O. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2024.

P. ASTM C847 - Standard Specification for Metal Lath; 2018 (Reapproved 2024).

Q. ASTM C1063 - Standard Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement-Based Plaster; 2025a.

R. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2024.

S. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2025.

T. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.

U. ASTM C1397 - Standard Practice for Application of Class PB Exterior Insulation and Finish Systems (EIFS) and EIFS with Drainage; 2025.

V. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2025.

W. ASTM D968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive; 2025.

X. ASTM D2247 - Standard Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity; 2025.

Y. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

Z. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

AA. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

BB. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2026.

CC. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

DD. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

EE. ASTM E695 - Standard Test Method of Measuring Relative Resistance of Wall, Floor, and Roof Construction to Impact Loading; 2022.

FF. ASTM E1677 - Standard Specification for Air Barrier (AB) Material or Assemblies for Low-Rise Framed Building Walls; 2023.

GG. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.

HH. ASTM E2273 - Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies; 2025.

II. ASTM E2485/E2485M - Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS), EIFS with Drainage or a Water Resistive Barrier Coating; 2026.

JJ. ASTM E2486/E2486M - Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS); 2022.

KK. ASTM G153 - Standard Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials; 2013 (Reapproved 2021).

LL. ASTM G155 - Standard Practice for Operating Xenon Arc Lamp Apparatus for Exposure of Materials; 2025.

MM. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

NN. ICC-ES AC219 - Acceptance Criteria for Exterior Insulation and Finish Systems; 2009, with Editorial Revision (2022).

OO. ICC-ES AC235 - Acceptance Criteria for EIFS Clad Drainage Wall Assemblies; 2015, with Editorial Revision (2022).

PP. ISO 9001 - Quality Management Systems — Requirements; 2015, with Amendment (2024).

QQ. NFPA 259 - Standard Test Method for Potential Heat of Building Materials; 2023, with Errata.

RR. NFPA 268 - Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source; 2022.

SS. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2025.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide data on system materials, product characteristics, performance criteria, and system limitations.

C. Shop Drawings: Indicate wall and soffit joint patterns, joint details, and molding profiles.

D. Product Samples: (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrate construction, finish, texture and color.

E. Delegated Design Documents: Drawings and calculations sealed by Structural Engineer.

F. Design Data: Indicate drawings and calculations sufficient to demonstrate compliance with applicable building code; signed and sealed by Engineer of Record for prefabricated panel systems.

G. Manufacturer's Installation Instructions: Indicate preparation required, installation techniques, and jointing requirements.

H. Designer's qualification statement.

I. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Perform design under direct supervision of Professional Structural Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

B. Maintain (1) One copy of written specified installation standard and Manufacturer's writen installation instructions upon Existing Project Site.

C. EIFS Manufacturer Qualifications: Provide EIFS products other than insulation from the same manufacturer with qualifications as follows:
   1. Member in good standing of EIMA (EIFS Industry Members Association).
   2. Manufacturer of EIFS products for not less than 5 years.
   3. Manufacturing facilities ISO 9001 certified.

D. Insulation Manufacturer Qualifications: Approved by Manufacturer of EIFS and approved and labeled under third party quality program as required by Contract Documents and those Local Authorities having Jurisdiction.

E. Installer Qualifications: Company specializing in type Work specified herein ,with minimum (10) Ten years documented experience.

1.06 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Construct mock up of typical EIFS application on specified substrate, size as directed by Architect and including flashings, joints, and edge conditions.

C. Locate mock upas directed by Architect.

D. **Mock up may not remain as part of permanent Work, this particular Project.**

1.07 DELIVERY, STORAGE, HANDLING

A. Delivery: Deliver all materials to Existng Project Site within Manufacturer's original, unopened containers, all labels intact. Inspect all materials and notify Manufacturer of any discrepancies.

B. Storage: Store all materials as directed by Manufacturer's written instructions.
   1. Protect all adhesives, finish materials from freezing, temperatures below (45) Forty Five degrees Fahrenheit and temperatures in excess of (85) Eighty Five degrees Fahrenheit.
   2. Protect all Portland cement based materials from moisture, humidity. Store under cover off the ground, in a dry location.
   3. Protect all insulation materials from exposure to sunlight.

1.08 FIELD CONDITIONS

A. **Do not** prepare any materials or apply Products under conditions other than those described within Manufacturer's written instructions.

B. **Do not** prepare any materials or apply any Products during inclement weather conditions.

C. **Do not** install any coatings, sealants when ambient temperature is below (50) Fifrty degrees Fahrenheit.

D. **Do not** leave any installed insulation board exposed to direct sunlight, for any extended period of time.

1.09 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Provide Manufacturer's detailed Warranty Package, minimum period, no lesss than (10) Ten Years.

C. Provide additional, separate detailed Warranty Package from installer, minimum period, no lesss than (10) Ten Years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design:
   1. Dryvit Systems, Inc; Dryvit Outsulation EIFS, Class PB: www.dryvit.com.
   2. Dryvit Systems, Inc; Dryvit Outsulation Plus MD EIFS, Class PB with Moisture Drainage: www.dryvit.com.
   3. Dryvit Systems, Inc; Dryvit Outsulation X EIFS, Class PB with Moisture Drainage: www.dryvit.com.
   4. Dryvit Systems, Inc; Dryvit Outsulation MD EIFS, Class PB with Engineered Moisture Drainage: www.dryvit.com.
   5. Dryvit Systems, Inc; Dryvit Outsulation PE EIFS, Class PB with Engineered and Pressure Equalized Rain Screen: www.dryvit.com.
   6. Dryvit Systems, Inc; Dryvit Outsulation LCMD EIFS 1 through 3, Class PB with Moisture Drainage: www.dryvit.com.
   7. Dryvit Systems, Inc; Dryvit Outsulation LCMD EIFS 4 and 5, Class PB with Moisture Drainage: www.dryvit.com.
   8. Dryvit Systems, Inc; Dryvit Cement Board MD Finish System with Moisture Drainage: www.dryvit.com.
   9. Sika Corporation; Senergy Channeled Adhesive CI (Continuous Insulation) Design Wall System: www.usa.sika.com/en/construction/eifs-stucco.com.
   10. Sika Corporation; Senergy Channeled Adhesive CI (Continuous Insulation) Design with MaxGrip Veneer Mortar: www.usa.sika.com/en/construction/eifs-stucco.html/#sle.
   11. Sika Corporation; Senergy Senerflex Vulcan NC (US): www.usa.sika.com/en/construction/eifs-stucco.com.
   12. Master Wall, Inc; Aggre flex Drainage System - Class PB Drainage EIFS: www.masterwall.com.
   13. Master Wall, Inc; Rollershield Drainage CIFS - Continuously Insulated Finish System with Drainage and Air/Water Barrier: www.masterwall.com.
   14. Sika Corporation; LaHabra Pebbletex CI-DCA: www.usa.sika.com/en/construction/eifs-stucco.com.

15. Sika Corporation; LaHabra Pebbletex CI-DCA with MaxGrip Veneer Adhesive: www.usa.sika.com/en/construction/eifs-stucco.com.
16. Sika Corporation; Parex Masonry Veneer System over CI: www.usa.sika.com/en/construction/eifs-stucco.com.
17. Sika Corporation; Parex Standard WaterMaster XPS: www.usa.sika.com/en/construction/eifs-stucco.com.
18. Sika Corporation; Parex Standard WaterMaster EIFS with Moisture Drainage: www.usa.sika.com/en/construction/eifs-stucco.com.
19. Sto Corp; StoTherm ci: www.stocorp.com.
20. Sto Corp; StoTherm ci XPS: www.stocorp.com.

B. Other Acceptable Exterior Insulation and Finish Systems Manufacturers:
1. Dryvit Systems, Inc; Dryvit Outsulation EIFS, Class PB: www.dryvit.com/#sle.
2. Dryvit Systems, Inc; Dryvit Outsulation Plus MD EIFS, Class PB with Moisture Drainage: www.dryvit.com.
3. Dryvit Systems, Inc; Dryvit Outsulation X EIFS, Class PB with Moisture Drainage: www.dryvit.com.
4. Dryvit Systems, Inc; Dryvit Outsulation MD EIFS, Class PB with Moisture Drainage: www.dryvit.com.
5. Dryvit Systems, Inc; Dryvit Outsulation PE EIFS, Class PB with Pressure Equalized Rain Screen: www.dryvit.com.
6. Dryvit Systems, Inc; Dryvit Outsulation LCMD EIFS 1 through 3, Class PB with Moisture Drainage: www.dryvit.com.
7. Dryvit Systems, Inc; Dryvit Outsulation LCMD EIFS 4 and 5, Class PB with Moisture Drainage: www.dryvit.com.
8. Dryvit Systems, Inc; Dryvit Outsulation RMD EIFS, Class PB, Residential with Moisture Drainage: www.dryvit.com.
9. Dryvit Systems, Inc; Dryvit Outsulation HDCI EIFS, Class PB with Moisture Drainage, High Durability Continuous Insulation: www.dryvit.com.
10. Dryvit Systems, Inc; Dryvit Outsulation HDCI Securock ExoAir 430 EIFS System, Class PB with Moisture Drainage, High Durability Continuous Insulation: www.dryvit.com.
11. Dryvit Systems, Inc; Dryvit Outsulation Masonry Veneer System: www.dryvit.com.
12. Dryvit Systems, Inc; Dryvit Outsulation Mineral Wool System: www.dryvit.com.
13. Dryvit Systems, Inc; Dryvit Outsulation Plus MD Securock ExoAir 430 EIFS System, Class PB with Moisture Drainage: www.dryvit.com.
14. Dryvit Systems, Inc; Dryvit Outsulation X Securock ExoAir 430 EIFS System, Class PB with Moisture Drainage: www.dryvit.com.
15. Dryvit Systems, Inc; Dryvit Outsulation MD Securock ExoAir 430 EIFS System, Class PB with Moisture Drainage: www.dryvit.com.
16. Dryvit Systems, Inc; Dryvit Outsulation PE Securock ExoAir 430 EIFS System, Class PB with Pressure Equalized Rain Screen: www.dryvit.com.
17. Dryvit Systems, Inc; Dryvit Cement Board MD Finish System, with Moisture Drainage: www.dryvit.com.
18. Dryvit Systems, Inc; NewBrick Lightweight Insulated Brick Veneer: www.dryvit.com/#sle.
19. Master Wall, Inc; Aggre-flex Drainage System - Class PB Drainage EIFS: www.masterwall.com.
20. Master Wall, Inc; Rollershield Drainage CIFS - Continuously Insulated Finish System with Drainage and Air/Water Barrier: www.masterwall.com.
21. Sika Corporation; LaHabra Pebbletex CI-DCA: www.usa.sika.com/en/construction/eifs-stucco.com.
22. Sika Corporation; LaHabra Pebbletex CI-DCA with MaxGrip Veneer Adhesive: www.usa.sika.com/en/construction/eifs-stucco.com.
23. Sika Corporation; Parex Masonry Veneer System over CI: www.usa.sika.com/en/construction/eifs-stucco.com.

24. Sika Corporation; Parex Standard WaterMaster XPS: www.usa.sika.com/en/construction/eifs-stucco.com.
25. Sika Corporation; Parex Standard WaterMaster EIFS with Moisture Drainage: www.usa.sika.com/en/construction/eifs-stucco.com.
26. Sika Corporation; Senergy Channeled Adhesive CI (Continuous Insulation) Design Wall System: www.usa.sika.com/en/construction/eifs-stucco.com.
27. Sika Corporation; Senergy Channeled Adhesive CI (Continuous Insulation) Design with MaxGrip Veneer Mortar: www.usa.sika.com/en/construction/eifs-stucco.com.
28. Sto Corp; StoTherm ci: www.stocorp.com.
29. Sto Corp; StoTherm ci XPS: www.stocorp.com.
30. Sto Corp; StoTherm ci Mineral: www.stocorp.com.
31. Sto Corp: www.stocorp.com.
32. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 EXTERIOR INSULATION, FINISH SYSTEM

A. Exterior Insulation and Finish System: DRAINAGE type; reinforced finish coating on flat-backed insulation board adhesive-applied directly to water-resistive coating over substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate(s) in tested samples.

B. Exterior Insulation and Finish System: BARRIER type; reinforced finish coating on insulation board adhesive-applied direct to substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate in tested samples.

C. Fire Characteristics:
1. Flammability: Pass, when tested in full accordance with NFPA 285.
2. Ignitibility: No sustained flaming when tested in full accordance with NFPA 268.
3. Fire Resistance: Complies with fire resistance requirements indicated on the drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
4. Fire Resistance: Provide custom testing or engineering analysis acceptable to the authorities having jurisdiction that shows that the addition of the EIFS assembly to the fire rated assembly will not reduce the fire rated assembly rating; test in full accordance with ASTM E119.
5. Potential Heat of Foam Plastic Insulation Tested Independently of Assembly: No portion of the assembly having potential heat that exceeds that of the insulation sample tested for flammability (above), when tested in accordance with NFPA 259 with results expressed in Btu per square foot.

D. Adhesion of Water Resistive Coating to Substrate: For each combination of coating and substrate, minimum flatwise tensile bond strength of 15 psi, when tested in full accordance with ASTM C297/C297M.

E. Adhesion to Water-Resistive Coating: For each combination of insulation board and substrate, when tested in full accordance with ASTM C297/C297M, maximum adhesive failure of 25 percent unless flatwise tensile bond strength exceeds 15 psi witin all samples.

F. Water Penetration Resistance: No water penetration beyond the plane of the base coat/insulation board interface after 15 minutes, when tested in full accordance with ASTM E331 at 6.24 psf differential pressure with tracer dye in the water spray; include in tested sample at least two vertical joints and one horizontal joint of same type to be used in construction; disassemble sample if necessary to determine extent of water penetration.

G. Drainage Efficiency: Average minimum efficiency of 90 percent, when tested in full accordance with ASTM E2273 for 75 minutes.

H. Salt Spray Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 300 hours exposure in accordance with ASTM B117, using at least three samples matching intended assembly, at least 4 by 6 inches in size.

I. Freeze Thaw Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 10 cycles, when tested in accordance with ICC-ES AC219 or ICC-ES AC235.

J. Weathering Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 2000 hours of accelerated weathering conducted in accordance with ASTM G153 Cycle 1 or ASTM G155 Cycles 1, 5, or 9.

K. Water Degradation Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 14 days exposure, when tested in accordance with ASTM D2247.

L. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.

M. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in full accordance with ASTM D968 with 113.5 gallons of sand.

N. Impact Resistance: Construct system to provide the following impact resistance without exposure of broken reinforcing mesh, when tested in accordance with ASTM E2486/E2486M:
   1. Standard: 25 to 49 in-lb, for those areas delineated witin Contract Documents.
   2. Medium: 50 to 89 in-lb, for those ares delineated within Contract Documents.
   3. High: 90 to 150 in-lb, for those area delineated within Contract Documents.
   4. Ultra High: Over 150 in-lb, for those areas delineated within Contract Documents

O. Impact Resistance: No cracking or denting when tested in accordance with ASTM E695 with a 30 pound impact mass.

2.03 MATERIALS

A. Finish Coating Top Coat: Water based, air curing, acrylic or polymer-based finish with integral color and texture.
   1. Texture: Medium.
   2. Texture: Dryvit Systems, Inc, Standard Textures, with Dirt Pickup Resistance; Quarzputz DPR: www.dryvit.com.
   3. Texture: Dryvit Systems, Inc, E-Finish (Lightweight); Quarzputz E: www.dryvit.com.
   4. Texture: Dryvit Systems, Inc, with Recycled Content; Mojave E: www.dryvit.com.
   5. Texture: Dryvit Systems, Inc, Specialty Finish Options; Ameristone: www.dryvit.com.
   6. Texture: Dryvit Systems, Inc; Elastomeric, with Dirt Pickup Resistance; Weatherlastic Quarzputz: www.dryvit.com.
   7. Texture: Dryvit Systems, Inc, with Hydrophobic (HDP) Additive; Quarzputz HDP: www.dryvit.com.
   8. Texture: Dryvit Systems, Inc, with Proven Mildew Resistance; Quarzputz PMR: www.dryvit.com.
   9. Texture: LaHabra by Sika Corporation, Standard Texture; Finetex: www.usa.sika.com/en/construction/eifs-stucco.com.
   10. Texture: Sika Corporation, Specialty Finish Options; SikaWall-6230 Chroma Finish: www.usa.sika.com/en/construction/eifs-stucco.com.
   11. Texture: Senergy by Sika Corporation, Standard Textures; Sahara: www.usa.sika.com/en/construction/eifs-stucco.com.
   12. Texture: LaHabra by Sika Corporation, Hydrophobic Finish; Tersus F1.0: www.usa.sika.com/en/construction/eifs-stucco.com.
   13. Texture: Senergy by Sika Corporation, Elastomeric Finish; Maxlastic F1.0: www.senergy-mbcc.sika.com.
   14. Texture: Sika Corporation; Parex AquaSol Enhanced Acrylic Finish Swirl Fine: www.parex.com.
   15. Texture: Sika Corporation; Parex Standard DPR Acrylic Finish (Dirt Pick-up Resistance) Swirl Fine: www.parex.com.
   16. Texture: Sto Corp; Polymer-Enhanced Acrylic Stolit 1.0 Fine: www.stocorp.com.

17. Texture: Sto Corp; Self-Cleaning Texture Stolit Lotusan Fine: www.stocorp.com.
18. Texture: Sto Corp; Specialty Finish Stolit Milano: www.stocorp.com.
19. Texture: Sto Corp; Dirt Pick-up Resistance Fine Essence DPR: www.stocorp.com.
20. Color: As selected by Architect from Manufacturer's full range of options.

B. Base Coat: Fiber reinforced, acrylic or polymer based product compatible with insulation board and reinforcing mesh.

C. Base Coat: Acrylic or polymer-modified, fiber reinforced Portland cement coating.
1. Portland Cement: ASTM C150/C150M, Type I or II.
2. Base Coat Thickness: 1/4 inch, minimum.
3. Products:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Reinforcing Mesh: Balanced, open weave glass fiber fabric, treated for compatibility and improved bond with coating, weight, strength, and number of layers as required to meet required system impact rating.

E. Lightweight Insulated Brick Veneer: Insulated core encapsulated by factory applied reinforced coatings, applied over EIFS.
1. Brick Type: As delineated within Contract Documents.
2. Brick Color: As selected by Architect from Manufacturer's full range of options.
3. Brick Color Blends: As selected by Architect from Manufacturer's full range of options.
4. Adhesives: As approved by insulated brick veneer Manufacturer for substrate this particular Project.
5. Mortar: Provide Manufacturer's approved acrylic admixture with Type N mortar cement that fully complies with ASTM C270.

F. Expanded Polystyrene (EPS) Board Insulation: Complies with ASTM C578.
1. Grooved Board: Back side of board adjacent to sheathing grooved with vertical channels designed to allow moisture to drain; at drainage points provide board configuration that permits drainage to the exterior.
2. Board Size: 24 by 48 inches.
3. Board Size Tolerance: Plus/minus 1/16 inch from square and dimension.
4. Board Thickness: As delineated within Contract Documents.
5. Board Edges: Square.
6. Type and Thermal Resistance, R-value (RSI-value): Type XI, 3.1 (0.55) per 1 inch thickness at 75 degrees F mean temperature using ASTM C177 test method.
7. Type and Board Density: Type XI, 0.70 pcf (12 kg/cu m), minimum.
8. Type and Compressive Resistance: Type XI, 5 psi (35 kPa), minimum.
9. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, when tested in accordance with ASTM E84.
10. Products:
    a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Graphite Polystyrene (GPS) Board Insulation: Complies with ASTM C578, Type VIII.
1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
3. Complies with fire resistance requirements shown on the drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
4. Board Edges: Square.
5. Water Absorption: 1 percent by volume, maximum.
6. Compressive Resistance: 14 psi.
7. Thermal Resistance: R-value of 5 per 1 inch at 75 degrees F mean temperature.
8. Products:
    a. BASF Corporation; Neopor Plus GPS: www.neopor.basf.us.com

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

H. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578, with natural skin surfaces.
1. Board Size: 48 by 96 inch.
2. Board Size Tolerance: 1/16 inch from square and dimension.
3. Board Thickness: As delineated within Contract Documents.
4. Dimensional Stability: 2 percent, maximum.
5. Board Edges: Square.
6. Type and Thermal Resistance, R-value (RSI-value): Type X, 5.0 (0.88) per 1 inch thickness at 75 degrees F mean temperature.
7. Type and Compressive Resistance: Type X, 15 psi (104 kPa), minimum.
8. Type and Board Density: Type X, 1.30 pcf (21 kg/cu m), minimum.
9. Type and Water Absorption: Type X, 0.3 percent by volume, maximum, by total immersion.
10. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, when tested in full accordance with ASTM E84.
11. Products:
a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Mineral Wool Block and Board Insulation: Fully comply with ASTM C612.
1. Facing: None, unfaced.
2. Flame Spread Index: 25 maximum when tested with facing in full accordance with ASTM E84.
3. Smoke Developed Index: 50 maximum when tested with facing in full accordance with ASTM E84.
4. Board Size: 48 by 48 inches.
5. Board Thickness: As delineated within Contract Documents.
6. Board Edges: Square.
7. Thermal Conductivity, k-factor: 0.26 per inch, minimum, when tested in full accordance with ASTM C518 at (75) Seventy Five degrees Fahrenheit.
8. Maximum Density: 8 pcf, nominal.
9. Products:
a. CertainTeed Corporation: www.certainteed.com.
b. Johns Manville: www.jm.com.
c. Owens Corning Corporation: www.owenscorning.com/en-us.com
d. ROCKWOOL; ROCKWOOL Frontrock: www.rockwool.com.
e. Substitutions: Reference Section 01 60 00 - Product Requirements for additioal Content.

J. Combination Drainage Layer, Water Resistive Barrier: Air and water resistive sheet complying with ASTM E1677 Type I, dimpled or otherwise profiled to maintain air and drainage space between insulation board and sheathing; minimum water vapor permeance of 20 perms; furnished or approved by EIFS Manufacturer.

K. Drainage Layer or Spacers: Furnished or approved by EIFS Manufacturer; capable of achieving specified drainage rate; not required to be water-resistive, air retarder, or vapor retarder.

L. Drainage Mat for Exterior Siding: Drainage layer with geotextile filter fabric applied over water resistive barrier on sidewall sheathing.
1. Composition: Three dimensional polymer matrix with fabric facing that faces to exterior of building.
2. Thickness: As delineated within Contract Documents,
3. Products:

a. Advanced Building Products, Inc; ABP Mortairvent: www.advancedbuildingproducts.com.
b. Freudenberg Performance Materials; EnkaWallDrain: www.freudenberg-pm.com.
c. Masonry Technology, Inc; Corrugated Lath Starter Strip: www.mtidry.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

M. Glass Mat Gypsum Sheathing: Glass mat gypsum substrate used as sheathing; ASTM C1177/C1177M; square edges.
1. Mold Resistance: Rating of 10, when tested in full accordance with ASTM D3273.
2. Regular: 1/2 inch thick.
3. Type X: 5/8 inch thick.

N. Cementitious Substrate Boards: Type A exterior units, fiber mat reinforced; ASTM C1325.
1. Thickness: 1/2 inch.
2. Size: 48 by 96 inches.

O. Air and Vapor Barrier Sheet: Self adhered, elastomeric styrene-butadiene-styrene (SBS) polymer-modified bitumen blend membrane with woven polyethylene composite facer, protected with release paper, and used as base for EIFS.
1. Thickness: 40 mil, 0.04 inch.
2. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
3. Water Vapor Permeance: Less than 0.1 perm, when tested in accordance with ASTM E96/E96M Procedure B - Water Method at (74) Seventy Four degrees Fahrenheit.
4. Products:
a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

P. Water Resistive Barrier Sheet: Constitutes an air retarder but which is vapor permeable; one of the following unless otherwise required by EIFS Manufacturer or authorities having jurisdiction:
1. Asphalt Felt: No.15, complying with ASTM D226/D226M Type I.
2. Air Retarder: Air and water resistive sheet fully complying with ASTM E1677 Type I, with minimum vapor permeance of 20 perms; furnished or approved by EIFS manufacturer.

Q. Water Resistive Barrier Coating: Fluid-applied air and water barrier membrane; applied to sheathing; furnished or approved by EIFS Manufacturer.

R. Water Resistive Barrier: Reference Section 07 75 00 - Weather Barriers.

S. Water Resistant Transition Membrane: Water-based polymer material used with reinforcing fabric to seal around openings and penetrations, and to protect edges.

T. Fluid Applied Flashing: Flexible water based polymer material suitable for use with reinforcing mesh and, if used with water-resistive barrier sheet, certified compatible with sheet material.

U. Flashing Tape: Self adhering rubberized asphalt tape with polyethylene backing or other material and surface conditioner furnished or approved by EIFS Manufacturer.

2.04 ACCESSORIES

A. Insulation Adhesive: That type as required by E.I.F.S. Manufacturer for substrate, this particular Project.

B. Insulation Fasteners: Fastener and plate system appropriate for substrate and as recommended by EIFS manufacturer.
1. Products:
a. TruFast Walls, a Division of Altenloh, Brinck & Co. US, Inc; Plasti-Grip PBLP2 Prong Washer: www.trufastwalls.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Metal Flashings: Reference Section 07 62 00 - Sheet Metal Flashing and Trim for additional Content.

D. Metal Lath: Self furring galvanized lath.

E. Metal Lath: ASTM C847, self furring galvanized diamond mesh, 2.5 lb/sq yd.

F. Trim: EIFS Manufacturer's standard PVC or galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.

G. Sealant Materials: Compatible with EIFS materials and as recommended by EIFS Manufacturer.

H. Exterior Soffit Vents: One piece, perforated, ASTM A653/A653M galvanized steel with G90 coating, with edge suitable for direct application to gypsum board and manufactured especially for soffit application. Provide continuous vent.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all substrate is sound, free of any oil, dirt, or other surface contaminants, efflorescence, loose materials, protrusions that might interfere with EIFS installation and is of a type, construction that is fully acceptable to EIFS Manufacturer. **Do not** commence any Work, this Section, until all substrate, adjacent materials are fully complete and thoroughly dry.

B. If paper any faced gypsum sheathing has been exposed to weather conditions for more than (20) Twenty calendar days, check for integrity of surface using that method specified within ASTM C1397 Annex A2, at minimum of (6) Six locations, or once every(3,000) Three Thousand square feet, whichever is greater; if any test fails, notify Architect immediately and **do not** start any installation Work, this Section.

C. Verify all substrate surfaces are flat, with no deviation greater than 1/16 inch, within an (8) Eight foot straightedge.

3.02 PREPARATION

A. Install self furring metal lath over all solid substrates that are deemed unacceptable to receive adhesively applied insulation. Install in full accordance with ASTM C1063.

1. Attach to concrete and concrete masonry using only corrosion resistant power or powder actuated fasteners or hardened concrete stub nails, not less than 3/4 inch long, with heads not less than 3/8 inch wide. Ensure all fasteners are securely attached to substrate and spaced at maximum 16 inches on center horizontally and 7 inches vertically.

B. Apply primer to all substrate as recommended by EIFS Manufacturer, for this particular Project.

3.03 INSTALLATION, GENERAL

A. Install in full accordance with EIFS Manufacturer's instructions and ASTM C1397.

3.04 INSTALLATION, WATER RESISTIVE BARRIER

A. Apply barrier coating as recommended by coating Manufacturer; prime substrate as required before application.

B. Mechanically attach sheet materials to substrate using fasteners and fastener spacing recommended by EIFS Manufacturer.

C. Seal substrate transitions and intersections with other materials to form continuous water-resistive barrier on exterior of sheathing, using method recommended by Manufacturer.

D. At door and window rough openings and other wall penetrations, seal water-resistive barrier and flexible flashings to rough opening before installation of metal flashings, sills, or frames, using method recommended by Manufacturer.

E. At moving expansion joints, apply flexible flashing or flashing tape across and recessed into joint with U loop forming continuous barrier but allowing movement.

F. Lap flexible flashing or flashing tape, minimum (8) Eight inches, each side, each joint or transition.

G. Install drainage layer or spacers after flashing tape has been completed.

H. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings. Provide vent area specified.

3.05 INSTALLATION, INSULATION

A. Install in accordance with Manufacturer's instructions.

B. Prior to installation of boards, install starter track and other trim level and plumb and securely fastened. Install only in full lengths, to minimize moisture intrusion; cut horizontal trim tight to vertical trim.

C. Install back wrap reinforcing mesh at all openings and terminations that are not to be protected with trim.

D. On wall surfaces, install boards horizontally. On horizontal surfaces, intall boards, only per Manufacturer's written instruction, this particular Project.

E. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous flush insulation surface, with no gaps in excess of 1/16 inch.

F. Fill gaps greater than 1/16 inch with strips or shims cut from the same insulation material.

G. Rasp irregularities off surface of installed insulation board.

H. Mechanical Fastening: Space fasteners only as recommended by EIFS Manufacturer.

I. Adhesive Attachment: Use omly that method recommended by EIFS Manufacturer.

J. Adhesive Attachment: Use method required by manufacturer to achieve drainage efficiency specified; do not close up drainage channels when placing insulation board.

3.06 CLEANING

A. Reference Sectin 01 70 00 - Execution and Closeout Requirements for additional Content.

B. Thoroughly clean all EIFS surfaces and Work, this Section.

3.07 PROTECTION

A. **Protect all Work, this Section, from any Damage.**

B. **Replace all Damaged Work, this Section, immediately**

END OF SECTION

SECTION 07 25 00
WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Weather Barriers.

1.02 DEFINITIONS

A. Weather Barriers: Materials or assemblies forming water-resistive barriers, air barriers, vapor retarders, or combination of one or more assemblies.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM D5590 - Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated Four-Week Agar Plate Assay; 2017 (Reapproved 2021).

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide detailed Product Data on all material characteristics, particular to this Project.

C. Shop Drawings: Provide detailed drawings of all special joint conditions, particular to this Project.

D. Manufacturer's Installation Instructions: Indicate all necessary preparation, installation, storage and handling criteria, particular to this Project.

1.05 FIELD CONDITIONS

A. Maintain thaty temperature, humidity recommended by materials Manufacturers before, during, and immediately following installation.

PART 2 PRODUCTS

2.01 WATER RESISTIVE BARRIERS

A. Description: Materials installed behind exterior wall coverings; designed to prevent liquid water from further penetration into exterior wall assembly. Primary materials include fluid-applied sheets; accessory materials include flashings and seam tapes.

B. Water Resistive Barrier Coating: Fluid applied air and water resistive coating for those various exterior substrates, partticular to this Project.
   1. Dry Film Thickness (DFT): As recommended by membrane Manufacturer for this particular Project.
   2. Water Resistive Barrier over Sheathing Compliance: Complying with ICC-ES AC212.
   3. Ultraviolet (UV) and Weathering Resistance: Approved by Manufacturer for up to 120 days of weather exposure.
   4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
   5. Resistance to Fungal Growth: No growth when tested in accordance with ASTM D5590.
   6. Products:
      a. Basis of Design: Prosoco, Inc.; R-Guard Cat 5: www.prosco.com.
      b. Basis of Design: Prosoco, Inc.; R-Guard Cat 5 Rain Screen: www.prosoco.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 ACCESSORIES

A. Provide a complete barrier system of membrane and accessories as recomended by the membrane manufacturer for the specific project conditions.

B. Seal and Perimeter Tapes: As recommended by water-resistive barrier manufacturer.

C. Flashings and Sealants: As recommended by water-resistive barrier manufacturer for application.

D. Flashings: Reference Section 07 62 00- Sheet Metal Flashing and Trim for additional Content.

E. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and weather barrier materials.
   1. Products:
      a. As recommended by membrane manufacturer.

F. Primer: Liquid applied polymer.
   1. Color: Green.
   2. Products:
      a. As recommended by membrane manufacturer.

G. Flexible Flashing: Self adhering or mechanically attached flashing used for wall penetrations in accordance with ICC-ES AC148 requirements.

H. Flashing Tape: Special reinforced film with high-performance adhesive.
   1. Application: Window and door opening flashing tape.
   2. Width: As required for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all surfaces, conditions fully comply with those requirements of Conract Documents.

3.02 INSTALLATION

A. Install all materials in full accordance with mMnufacturer's written installation instructions.

B. Apply sealants within recommended temperature range in accordance with manufacturer's installation instructions.

C. Openings and Penetrations in Exterior Water Resistive Barriers:
   1. Install flashing over sills, covering entire sill framing member, and extend at least (8) eight inches onto water resistive barrier and at least (8) eight inches up jambs; mechanically fasten stretched edges.
   2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least (8) eight inches wide; do not seal sill flange.
   3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least (8) eight inches wide, and covering entire depth of framing.
   4. At head of openings, install flashing under water resistive barrier extending at least (8) eight inches beyond face of jambs; seal water resistive barrier to flashing.
   5. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water resistive barrier.

3.03 PROTECTION

A. **Do not** leave any materials exposed to weather conditions, longer than those recommendations set forth by Product Manufacturer.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 07 31 13
ASPHALT SHINGLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Asphalt Shingles.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 - Miscellaneous Rough Carpentry.

B. Section 07 21 00 - Thermal Insulation.

C. Section 07 62 00 - Sheet Metal Flashing and Trim.

D. Section 07 71 23 - Manufactured Gutters and Downspouts.

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY"

A. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2025.

B. ASTM D1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test); 2008 (Reapproved 2023).

C. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2025.

D. ASTM D3161/D3161M - Standard Test Method for Wind Resistance of Steep Slope Roofing Products (Fan-Induced Method); 2020 (Reapproved 2025).

E. ASTM D3462/D3462M - Standard Specification for Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules; 2025.

F. ASTM D3909/D3909M - Standard Specification for Asphalt Roll Roofing (Glass Felt) Surfaced with Mineral Granules; 2022.

G. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2024).

H. ASTM D4869/D4869M - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing; 2016a (Reapproved 2021).

I. ASTM D6380/D6380M - Standard Specification for Asphalt Roll Roofing (Organic Felt); 2003 (Reapproved 2022).

J. ASTM D7158/D7158M - Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method); 2024a.

K. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

L. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2025.

M. ASTM F1667/F1667M - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples; 2021a.

N. ICC-ES AC188 - Acceptance Criteria for Roof Underlayments; 2023.

O. ICC-ES AC207 - Acceptance Criteria for Polypropylene Roof Underlayments; 2012, with Editorial Revision (2015).

P. Miami (APD) - Approved Products Directory; Miami-Dade County; Current Edition.

Q. NRCA (RM) - The NRCA Roofing Manual; 2026.

R. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

S. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content

B. Product Data: Provide detailed data delineating material construction, characteristics, performance and limitations applicable to this particular Project.

C. Shop Drawings: Identify all specially configured flashings, joining methods locations and installation details applicable to this particular Project.

D. Samples: Submit (2) Two Product Samples, Manufactur's standard sized, for each shingle color delineated within Contract Documents, accurately representing construction, texture, pattern, color and finish.

E. Manufacturer's Installation Instructions: Indicate installation criteria and procedures applicable to this particular Project..

F. Manufacturer's Certificate: Certify all Products meet or exceed all Contract Documents requirements.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Warranty Documentation: Submit Manufacturer's Warranty and ensure all Forms have been completed within Owner's name, while havin been registered with said Manufacturer.

J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Extra Shingles: (150) One Hundred Fifty Square feet, each type and color.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacture of Work, this Section,with minimum (15) Fifteen Years documented experience.

B. Installer Qualifications: Company specializing in installing Work, this Section, with minimum (15) Fifteen Years documented experience.

1.06 MOCK UPS

A. Reference Section 01 40 00- Quality Requirements for additional Content.

B. Provide mock up minimum (50) Fity square foot area, including underlayment, shingles, eave protection membrane and all related flashings.

C. Locate as directed by Architect.

D. **Mock up construction may not remain as part of permanent Work, this particular Project**.

1.07 DELIVERY, STORAGE, HANDLING

A. Construction Waste Management and Disposal as directed by Architect and those Local Authorities having Jurisdiction.

B. Deliver, store all materials with labels intact withn Manufacturer's unopened packaging, until ready for installation.

C. Store all materials under dry and waterproof cover, well ventilated and elevated above grade on flat surface.

D. Protect all materials from any harmful environmental elements, construction dust, direct sunlight or any other potentially detrimental conditions.

E. When storing roofing materials on roofing system, ensure no damage occurs to supporting members or materials.

1.08 FIELD CONDITIONS

A. **Do not** install shingles, eave protection memerane or underlayment when surface, ambient air, wind chill or temperatures fall outside respective Manufacturer's written perameters.

1.09 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Provide Manufacturer's Lifetime Warranty, all Work this Section.

C. System Correction Period: **Replace all defective, damaged Work immediately**.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Asphalt Shingles:
   1. CertainTeed; Landmark PRO Solaris: www.certainteed.com.
   2. GAF; Timberline HDZ RS Shingles: www.gaf.com..
   3. Owens Corning Corpwww.owenscorning.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 ASPHALT SHINGLES

A. Asphalt Shingles: Asphalt coated glass felt, mineral granule surfaced, fully complying with ASTM D3462/D3462M.
   1. Fire Resistance: Class A, fully complying with ASTM E108.
   2. Wind Resistance: Class A, when tested in full accordance with ASTM D3161/D3161M.
   3. Wind Resistance (Uplift): Class G, when tested in full accordance with ASTM D7158/D7158M.
   4. Fire or Wind Resistance Criteria: Provide UL (DIR) listed and labeled products.
   5. Self sealing type.
   6. Color: As selected by Architect from Manufacturer's full range of options.

2.03 SHEET MATERIALS

A. Roll Roofing:
   1. Smooth Surfaced Roll Roofing: Asphalt-coated organic felt, with smooth asphalt coating both sides, complying with ASTM D6380/D6380M, Class S, Type III, 51.1 lb/100 sq ft.

B. Eave Protection Membrane:
   1. Eave Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970/D1970M; 40 mil total thickness; with strippable treated release paper and polyethylene sheet top surface.

C. Eave Edge Starter Shingles: Glass felt base, with ceramic coated mineral granules tightly embedded in refined, water-resistant asphalt, complying with ASTM D3462/D3462M.
   1. Wind Resistance: Class F, when tested in accordance with ASTM D3161/D3161M.
   2. Fire Resistance: Class A, complying with ASTM E108.

D. Underlayment: Synthetic non-asphaltic sheet, intended by Manufacturer, for mechanically fastened roofing underlayment without sealed seams.
   1. Self Sealability: Passing nail sealability test specified within ASTM D1970/D1970M.
   2. Low Temperature Flexibility: Passing test specified within ASTM D1970/D1970M.
   3. Fasteners: As recommended by Manufacturer or those Local Authorities having Jurisdiction.
   4. Products:
      a. CertainTeed; DiamondDeck Underlayment: www.certainteed.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Underlayment: Self adhering, rubber modified asphalt sheet fully complying with ASTM D1970/D1970M; 45 mils, 0.045 inch total thickness; with strippable release film and woven polypropylene sheet top surface.
   1. Minimum Requirements: Comply with ICC-ES AC188.
   2. Products:
      a. CertainTeed; Grace Vycor Select: www.certainteed.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

2.04 FLASHING

A. Metal Flashing: Reference Section 07 62 00 - Sheet Metal Flashing and Trim for additional Content.

B. Metal Flashings: Provide sheet metal eave edge, gable edge, ridge, ridge vents, open valley flashing, chimney flashing, dormer flashing, and other flashing as indicated.
   1. Form flashings to profiles indicated on drawings.
   2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
   3. Hem exposed edges of flashings minimum 1/4 inch on underside.
   4. Coat concealed surfaces of flashings with bituminous paint.

C. Flexible Flashing: Self adhering polymer modified asphalt sheet fully complying with ASTM D1970/D1970M; 40-mil, 0.040-inch total thickness, including strippable treated release paper and polyethylene sheet top surface.
   1. Products:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.05 ACCESSORIES

A. Roofing Nails: Standard round wire shingle type, galvanized steel, stainless steel, aluminum roofing nails, or copper roofing nails, minimum 3/8-inch head diameter, 12-gauge, 0.109-inch nail shank diameter, 1-1/2 inches long and fully complying with ASTM F1667/F1667M.

B. Asphalt Roof Cement: ASTM D4586/D4586M, asbestos free.

C. Bituminous Paint: Acid and alkali resistant type; color, black.

D. Plastic Ridge Vents: Extruded plastic including vented openings, **do not permit** any direct water or weather to enter building structure; flanged, as required to receive shingles.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** existing conditions, prior to starting Work.

B. **Confirm all** roof deck is of sufficient thickness to accept fasteners.

C. **Verify all** roof penetrations and plumbing stacks are in place and flashed to deck surface.

D. **Confirm all** roof openings are correctly framed.

E. **Verify all** adeck surfaces are completly dry, free of ridges, warps, or voids.

3.02 PREPARATION

A. Seal any and all roof deck joints wider than 1/16 inch, as recommended by shingle Manufacturer.

B. At those areas where eave protection membrane is sheduled to be adhered directlto substrate, fill all knowt holes, surface cracks with latex filler..

C. Broom clean all deck surfaces before installing underlayment or eave protection.

D. Protect all surrounding areas and adjacent surfaces from any damage during execution of Work.

E. Install all eave edge flashings tight with fascia boards, weather lap joints minim (8) eight inches and seal with roof cement, as required to securely anchor flange.

3.03 INSTALLATION

A. Eave Protection Membrane:

1. Install eave protection membrane from eave edge to minimum (72) SeventyTwo inches up slope beyond interior face of exterior walls.
2. Install eave protection membrane in accordance with Manufacturer's instructions and NRCA (RM) applicable requirements.

B. Underlayment:
1. Roof Slopes Up to 4:12: Install two layers of underlayment over area not protected by eave protection, with ends and edges weather lapped minimum 4 inches; stagger end laps of each consecutive layer and nail in place.
2. Roof Slopes Greater Than 4:12: Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4 inches; stagger end laps of each consecutive layer, nail in place, and weather lap minimum 4 inches over eave protection.
3. Weather lap and seal watertight with plastic cement any items projecting through or mounted on roof.

C. Valley Protection:
1. Install valley protection in accordance with SMACNA (ASMM).
2. Install one ply of smooth surfaced roll roofing, minimum twenty four inches wide, centered over valleys.
3. Install flexible flashing full in accordance with Manufacturer's instructions and NRCA (RM) applicable requirements.

D. Metal Flashing:
1. Install all flashings in full accordance with Manufacturer's written instructions and NRCA (RM) requirements, this particular Project.
2. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
3. Secure in place with nails and conceal fastenings.
4. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.

3.04 CLEANING

A. Reference Section 01 70 00 - Execution and Closeout Requirements for additional Content.

B. Thoroughly clean all Work, this Section.

3.05 PROTECTION

A. Do not permit any traffic upon any Work, this Section.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sheet Metal Flashing and Trim.

1.02 RELATED REQUIREMENTS

A. Reference Section 06 10 53 Miscellaneous Rough Carpentry for additional Content.

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY "...

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

F. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

G. ASTM B32 - Standard Specification for Solder Metal; 2020.

H. ASTM B101 - Standard Specification for Lead-Coated Copper Sheet and Strip for Building Construction; 2022.

I. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

J. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2022.

K. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products; 2025.

L. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

M. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2025.

N. ASTM D1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test); 2008 (Reapproved 2023).

O. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2015a (Reapproved 2021).

P. ASTM D4479/D4479M - Standard Specification for Asphalt Roof Coatings - Asbestos-Free; 2007 (Reapproved 2024).

Q. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2024).

R. CDA A4050 - Copper in Architecture - Handbook; Current Edition.

S. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene meeting minimum (21) twenty one calendar days prior to beginning Work of this Section.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content

B. Shop Drawings: Provide detailed Submital deleineating material profile, jointing pattern, all jointing details, fastening methods, flashings, terminations, and installation details.

C. Samples: Submit (2) two Product Samples, Manufacturer's standard size, accurately represting construction, color and finish.

1.06 QUALITY ASSURANCE

A. Perform all Work in full accordance with a SMACNA (ASMM) and CDA A4050 requirements.

B. Maintain (1) One copy, each current document,upon Existing Project Site.

C. Fabricator and Installer Qualifications: Companies specializing in sheet metal work with minimum (15) Fifteen years, documented experience.

1.07 DELIVERY, STORAGE, HANDLING

A. Stack all materials, as required to prevent any twisting, bending, abrasions, and as required to provide proper ventilation. Slope all metal sheets, as required to ensure drainage.

B. Prevent all contact with any materials that might cause discoloration or staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sheet Metal Flashing and Trim:
   1. ALUCOBOND by 3A Composites USA; ALUCOBOND AXCENT: www.alucobondusa.com
   2. Hickman Edge Systems: www.hickmanedgesystems.com
   3. Petersen Aluminum Corporation: www.pac-clad.com
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Exterior Penetration Flashing Panel:
   1. Quickflash Weatherproofing Products, In.: www.quickflashproducts.com
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 SHEET MATERIALS

A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal.

B. Pre Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal, shop pre-coated with PVDF coating.
   1. Silicone Modified Polyester Coating: Pigmented organic powder coating, AAMA 2603; baked enamel finish system.
   2. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
   3. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
   4. Color: As selected by Architect from Manufacturer's full range of options

C. Anodized Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 20 gauge, 0.032 inch thick; clear anodized finish.
   1. Clear Anodized Finish: AAMA 611, AA-M12C22A41, Class I, clear anodic coating not less than 0.7 mil, 0.0007 inch thick.
   2. Color Anodized Finish: AAMA 611, AA-M12C22A42/44, Class I, integrally or electrolytically colored anodic coating not less than 0.7 mil, 0.0007 inch thick.
      a. Color: As selected by Architect from Manufacturer's full range of options.

D. Pre Finished Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 18 gauge, 0.040 inch thick; plain finish shop pre-coated with silicone modified polyester coating.
   1. Silicone Modified Polyester Coating: Pigmented organic powder coating, AAMA 2603; baked enamel finish system.
   2. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
   3. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; pretreated metal with two-coat system including primer and color coat with at least 70 percent PVDF coating.
   4. Fluoroethylene Vinyl Ether (FEVE) Coating: Superior performing organic powder coating, AAMA 2605; base coat with clear top coat of FEVE coatings.
   5. Color: As selected by Architect from Manufacturer's full range of options

E. Lead Sheet: ASTM B749, 0.047-inch minimum thickness; UNS Number L51121.

F. Stainless Steel: ASTM A666/A666M, Type 304 alloy, soft temper, 28 gauge, 0.0156 inch thick; smooth No. 4 - Brushed finish.

G. Terne Coated Steel: 28-gauge, 0.0149-inch thick copper bearing carbon steel core material with 0.092 lb/sq ft terne alloy coating on both sides of core metal.

H. Copper: ASTM B370, cold rolled 16 oz/sq ft, 24 gauge, 0.0216 inch thick; natural finish.

I. Lead Coated Copper: ASTM B101, 24 oz/sq ft weight of bare copper sheet, HOO (cold rolled) temper.

J. Terne Coated Stainless Steel: 28-gauge, 0.0156-inch ASTM A666/A666M Type 304 alloy core material with 0.092 lb/sq ft terne alloy coating on both sides of core metal.

2.03 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Fabricate cleats of interlocking sheet metal.

C. Form pieces in longest possible lengths.

D. Hem all exposed edges 3/4 inch continuous, on underside.

E. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet type or interlocking hooked seams.

F. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

G. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

H. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.04 GUTTERS, DOWNSPOUTS

A. Reference Section 07 71 23 Manufactured Gutters and Downspouts for additional Content.

B. Gutters: SMACNA (ASMM) Rectangular profile.

C. Downspouts: Rectangular profile.

D. Gutters and Downspouts: Size for rainfall intensity determined by a storm occurrence of 1 in 10 years in full accordance with SMACNA (ASMM).

E. Gutters and Downspouts: Size as delineated within Contract Documents.

F. Accessories: Profiled to suit gutters and downspouts.
   1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

G. Splash Pans: Same material, color, finish as downspouts, formed as delineated within Contract Documents.

H. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3,000 psi at 28 days, with minimum 5 percent air entrainment.

I. Downspout Boots: Steel.

J. Downspout Extenders: Same material, color, finish as downspouts.

K. Seal tight, all joints

2.05 FLASHING

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

B. Polyvinyl butyral lead or copper replacement flashing with recycled safety foil glass, 118-mil, 0.118-inch thick roll in accordance with ASTM D1876.
   1. Products:
      a. VaproShield, LLC; Leadax Flashing: www.vaproshield.com
      b. Substitutions: Reference Sectin 01 60 00 - Product Requirements for additional Content.

2.06 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Underlayment: ASTM D226/D226M, organic roofing felt, Type I, No. 15.

C. Slip Sheet: Rosin-sized sheathing paper.

D. Primer Type: Zinc chromate.

E. Protective Backing Paint: Zinc molybdate alkyd.

F. Concealed Sealants: Non curing butyl sealant.

G. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by Manufacturer for substrates to be sealed; color to match adjacent material.
   1. Products:
      a. Franklin International, Inc; Titebond WeatherMaster Metal Roof Sealant: www.titebond.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

H. Fenestration Perimeter Flashing Attachments: Two-piece flashing receiver and clip of extruded aluminum, at least 0.045 inch thick, for attaching flashing at perimeter of exterior wall fenestration openings.
   1. Provide flashing receiver profile appropriate for flashing applications.
   2. Products:
      a. York Manufacturing, Inc; AirSill Flashing Receivers: www.yorkmfg.com
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos free.

J. Reglets: Surface-mounted type, galvanized steel; face and ends covered with plastic tape.

K. Solder: ASTM B32, Alloy Grade - Sn50 (50/50).

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all roof openings, curbs, pipes, sleeves, ducts and vents are solidly set, reglets in place and nailing strips correctly located.

B. Confirm all roofing termination, base flashings are in place, sealed and fully secure.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.

C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Fully comply with all Contract Documents;

B. Insert flashings into reglets to form tight fit; secure in place with lead wedges; pack remaining spaces with lead wool; seal flashings into reglets with sealant.

C. Secure all flashings in place using only concealed fasteners.

D. Apply plastic cement compound between all metal flashings and immediately adjacent building materials.

E. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

F. Exterior Flashing Receivers: Install in accordance with Manufacturer's recommendations, and in proper relationship with adjacent construction, and as follows:
   1. Secure receiver at perimeter of wall opening with adhesives or fasteners.
   2. Place flashing into receiver channel.
   3. Secure flashing with receiver clip.

G. Seal metal joints watertight.

H. Solder metal joints for full metal surface contact, and after soldering wash metal clean with neutralizing solution and rinse with water.

I. Secure gutters and downspouts in place with concealed fasteners.

J. Slope gutters 1/4 inch within (8) Eight feet, minim

K. Connect all downspouts eithier to boots, grout connections watertight, or provide pre cast concrete splash block, same.

3.04 FIELD QUALITY CONTROL

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. All inspections shall require surveillance of all Work, during installation, as required to confirm full compliance with Contract Documents.

END OF SECTION

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SECTION 07 71 00
ROOF SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof Specialties.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2022.

C. NRCA (RM) - The NRCA Roofing Manual; 2025.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide detailed Product Data, shape of all components, materials, finishes, anchor types and locations.

C. Shop Drawings: Provide detailed configuration, dimension of all components, adjacent construction, required clearances and any tolerances all other affected work, particular to this Project.

D. Samples: Submit (2) two Product Samples, Manufacturer's standard size, as required to accurtely delineate construction, color and finish.

E. Manufacturer's Installation Instructions: Indicate detailed written special procedures, fasteners, supporting members, perimeter conditions requiring special attention, particular to this Project.

PART 2 PRODUCTS

2.01 COMPONENTS

A. Copings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
   1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness, and finish as cap; concealed stainless steel fasteners.
      a. Snap on coping with intermittent clips for capping parapet walls.
      b. Does not require exposed fasteners or joint sealants.
   2. Performance Characteristics:
      a. Snap on Coping Cap Sections: Capable of expanding and contracting freely, statically engaged onto mechanically secured clips.
      b. Snap on Coping Cap Joints: Underlayed with concealed splices.
   3. Pull Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
   4. Wall Width: As indicated on drawings.
   5. Outside Face Height: As indicated on drawings.
   6. Inside Face Height: As indicated on drawings.
   7. Material: Formed steel sheet, galvanized, 22 gauge, 0,03 inch thick, minimum.
   8. Intermittent Clips:
      a. Material: 16 ga. galvanized steel.
      b. Width: 12 inches.
      c. Fastener Holes: Pre Punched.
   9. Concealed Splices:
      a. Material: Same as snap on coping cap.
      b. Finish and Color: Same as snap on coping cap.

c. Width: Minimum 8" inches.
d. Sealant Strips: Factory applied dual non curing isocryl butyl sealant strips.

10. Finish: 70 percent polyvinylidene fluoride.
11. Color: As selected by Architect from Manufacturer's full range of options.
12. Products:
    a. ATAS International, Inc; Rapid-Lok Coping: www.atas.com.
    b. Hickman Edge Systems; PermaSnap Cantilever Coping: www.hickmanedgesystems.com.
    c. Metal Era Inc; One Edge Coping: www.metalera.com.
    d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Pipe and Penetration Flashing: Base of rounded aluminum, compatible with sheet metal roof systems, and capable of accomodating pipes sized between 3/8 inch and 12 inches.
   1. Caps: EPDM.

2.02 FINISHES

A. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as selected by Architect from Manufacturer's full range of options.

2.03 ACCESSORIES

A. Sealant for Joints in Linear Components: As recommended by component Manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all deck, curbs, roof membrane, base flashing, and any other items that might affect Work of this Section are in place and positioned correctly, prior to beginning any Work.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install all components in full accordance with Manufacturer's written instructions and NRCA (RM) applicable requirements.

B. Seal all joints, within components, whenever required by Manufacturer.

C. Anchor all components securely.

D. Coordinate installation of all components, this Section with installation of all roofing membrane and base flashings.

E. Coordinate installation of all sealants, roofing cement with Work, this Section, as required to ensure complete water tightness.

F. Coordinate installation of all flashing flanges into reglets.

END OF SECTION

SECTION 07 71 23
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufactured Gutters and Downspouts.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications.

B. Section 07 62 00 - Sheet Metal Flashing and Trim.

C. Section 09 91 13 - Exterior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

B. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

E. ASTM A48/A48M - Standard Specification for Gray Iron Castings; 2022.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

G. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

H. ASTM B32 - Standard Specification for Solder Metal; 2020.

I. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

J. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2022.

K. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2025.

L. ASTM D4479/D4479M - Standard Specification for Asphalt Roof Coatings - Asbestos-Free; 2007 (Reapproved 2024).

M. CDA A4050 - Copper in Architecture - Handbook; Current Edition.

N. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Fully comply with SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.

B. Fully comply with applicable code for size and method of rain water discharge.

C. Maintain one copy of each document on site.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Admnistrative Rquirements for additional Content.

B. Product Data: Provide detailed Product Data all prefabricated components, paticular to this Project.

C. Shop Drawings: Provide detailed locations, configurations, jointing methods, fastening methods and installation details, particular to this Project.

D. Samples: Submit (2) two Product Sample, Manufacturer's standard size, as required to accurately represent construction, finish, color and configuration.

1.06 DELIVERY, STORAGE, HANDLING

A. Coordinate with those Local Authorities having Jurisdiction for all applicable packaging waste requirements.

B. Stack all materials, as required to prevent any twisting, bending, or abrasion and provide proper ventilation. Slope as required to properly drain.

C. Prevent any contact with materials, that might cause discoloration, staining or damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gutters and Downspouts:
   1. Alside, Inc.: www.alside.com.
   2. ATAS International, Inc. www.atas.com.
   3. Hickman Edge Systems; Wind Resistant Gutter: www.hickmanedgesystems.com.
   4. Metal-Era Inc; Seal-Tite WR Gutter: www.metalera.com.
   5. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Scupper and Collectors:
   1. ATAS International, Inc.: www.atas.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 MATERIALS

A. Polyvinyl Chloride (PVC): ASTM D2665, virgin vinyl, SDR 35 pipe and fittings, high impact type, colorfast.

B. Galvanized Steel Sheet: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 0.02 inch thick base metal.

C. Pre Finished Galvanized Steel Sheet: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 0.02 inch hick base metal.
   1. Finish: Shop pre coated with modified silicone coating.
   2. Color: As selected by Architect from Manufacturer's full range of options

D. Aluminum Sheet: ASTM B209/B209M.
   1. Finish: Mill.
   2. Color: As selected by Architect from Manufacturer's full range of options.

E. Pre Finished Aluminum Sheet: ASTM B209/B209M; 0.032 inch thick.
   1. Finish: Plain, shop pre-coated with modified silicone coating.
   2. Color: As selected by Architect from Manufacturer's full range of options.

F. Stainless Steel: ASTM A666/A666M Type 304, soft temper, 0.015 inch thick; smooth No. 4 finish.

G. Copper: ASTM B370, cold rolled 0.22 inch thick; natural finish.

H. Primer: Zinc molybdate type.

I. Protective Backing Paint: Zinc molybdate alkyd.

J. Solder: ASTM B32; Sn50 (50/50) type.

K. Primer and Solvent for Polyvinyl Chloride (PVC): As recommended by Manufacturer.

2.03 COMPONENTS

A. Gutters: Style, profile as delineated within Contract Documents.

B. Downspouts: CDA rectangular profile.

C. Downspouts: Polyvinyl chloride (PVC); rectangular profile.

D. Connectors: Furnish required connector pieces for polyvinyl chloride (PVC) components.

E. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Anchoring Devices: In accordance with CDA requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

F. Fasteners: Galvanized steel, with soft neoprene washers.

2.04 FABRICATION

A. Form all gutters, downspouts of profiles,sizes as delineated within Contract Documents.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem all exposed edges of metal.

E. Tin edges of copper sheet to be soldered. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints.

F. Fabricate gutter and downspout accessories; seal watertight.

2.05 FINISHES

A. Class I Clear Anodized Finish: AAMA 611 AA-M12C22A41, clear anodic coating not less than 0.7 mil, 0.0007 inch thick.

B. Class II Clear Anodized Finish: AAMA 611 AA-M12C22A31, clear anodic coating not less than 0.4 mil, 0.0004 inch thick.

C. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42, integrally colored anodic coating not less than 0.7 mil, 0.0007 inch thick.

D. Class II Color Anodized Finish: AAMA 611 AA-M12C22A41, integrally colored anodic coating not less than 0.4 mil, 0.0004 inch thick.

E. Modified silicone polyester coating: Baked enamel system, comply with AAMA 2603.

F. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604, multiple coat, thermally cured fluoropolymer finish system; color as indicated.

G. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer.

2.06 ACCESSORIES

A. Splash Pans: Same metal type as downspouts, rolled sides as required for inverted pan placement.

B. Splash Pads: Precast concrete type, profiles size(s) as indicated; minimum 3,000 psi compressive strength at 28 days, with minimum 5 percent air entrainment.

C. Splash Pads: Polyvinyl chloride (PVC), profile size(s) as indicated.

D. Downspout Boots: Smooth interior without boxed corners or choke points; include integral lug slots and on-body cleanout and cover with neoprene gaskets.
   1. Configuration: Angular.
   2. Material: Cast iron; ASTM A48/A48M. Casting thickness 3/8 inch minimum.
   3. Finish: Manufacturer's factory applied powder coat finish.
   4. Color: As selected by Architect from Manufacturer's full range of options
   5. Accessories: Manufacturer's standard stainless steel fasteners, stainless steel building wall anchors, and rubber coupling.
   6. Products:
      a. Downspoutboots.com, a division of J. R. Hoe & Sons: www.downspoutboots.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all existing conditions, prior to commencing any Work, this Section.

B. Confirm all surfaces are ready to receive Work, this Section, before beginning any Work, this Section.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

3.02 PREPARATION

A. Paint concealed sheet metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Install all gutters, downspouts, and accessories in full accordance with Manufacturer's written Instructions.

B. **Slope all gutters**, as required for proper drainage.

END OF SECTION

SECTION 07 72 00
ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof Accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 71 00 - Roof Specialties.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. 29 CFR 1910.23 - Ladders; Current Edition.

B. 29 CFR 1910.29 - Fall Protection Systems and Falling Object Protection - Criteria and Practices; Current Edition.

C. 29 CFR 1926.502 - Fall protection systems criteria and practices; Current Edition.

D. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

F. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

H. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2025.

I. ASTM B69 - Standard Specification for Rolled Zinc; 2021.

J. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

K. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

L. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

M. ASTM B370 - Standard Specification for Copper Sheet and Strip for Building Construction; 2022.

N. FM (AG) - FM Approval Guide; Current Edition.

O. FM 4430 - Examination Standard for Heat and Smoke Vents; 2022.

P. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

Q. UL (DIR) - Online Certifications Directory; Current Edition.

R. UL 793 - Automatically Operated Roof Vents for Smoke and Heat; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.
   5. For smoke hatches, submit evidence of approval by evaluation agency specified.

C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.
   1. Non-penetrating Rooftop Supports: Submit design calculations for loadings and spacings.
   2. Snow Guards: Submit design calculations for loadings and spacings based on manufacturer testing.
   3. Submit shop drawings sealed and signed by a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

D. Certificate: For smoke hatches, provide certificate of approval from authority having jurisdiction.

E. Warranty Documentation:
   1. Submit Manufacturer's complete Warranty documentation, particular to this Project.
   2. Ensure all forms have been completed in Owner's name and registered with Manufacturer.
   3. Submit dedocumentation that roof accessories are acceptable to roofing Manufacturer, and do not limit the roofing Warranty.

1.05 DELIVERY, STORAGE, HANDLING

A. Provide Construction Waste Management and Disposal operations, as required by Contract Documents and those Local Authorities having Jurisdiction.

B. Store all Products within Manufacturer's unopened packaging until ready for installation.

C. Store all Products under cover and elevated above grade.

1.06 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Manufacturer Warranty: Provide (10) Ten year Mannufacturer's Warranty. Complete all forms within Owner's name and register same with Manufacturer.

PART 2 PRODUCTS

2.01 ROOF CURBS

A. Roof Curbs Manufacturers:
   1. AES Industries Inc.: www.aescurb.com.
   2. The Pate Company: www.patecurbs.com.
   3. LMCurbs; Roof Curbs: www.lmcurbs.com.
   4. MKT Metal Manufacturing: www.mktduct.com
   5. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Roof Curbs Mounting Assemblies: Factory fabricated hollow sheet metal construction, internally reinforced, and capable of supporting superimposed live and dead loads and designated equipment load with fully mitered and sealed corner joints welded or mechanically fastened, and integral counterflashing with top and edges formed to shed water.
   1. Applications: Roof curbs used for roof penetrations/openings as indicated on drawings.
   2. Roof Curb Mounting Substrate: Curb substrate consists of standing seam metal roof panel system.
   3. Sheet Metal Material:
      a. Aluminum: 0.080 inch minimum thickness, with 3003 alloy, and H14 temper.
         1) Finish: As selected by Architect from Manufacturer's full range of options.
         2) Color: As selected by Architect from Manufacturer's full range of options.
      b. Galvanized Steel: Hot dip zinc coated steel sheet complying with ASTM A653/A653M, SS Grade 33; G60 coating designation; 0.048 inch thick.
         1) Finish: As selected by Architect from Manufacturer's full range of options.
         2) Color: As selected by Architect from Manufucturer's full range of options.
      c. Galvalume Steel: Hot-dip aluminum zinc alloy coated steel sheet complying with ASTM A792/A792M; AZ55 coating designation; 0.048 inch thick.
         1) Finish: As selected by Architect from Manufacturer's full range of options.
         2) Color: As selected by Architect from Manufacturer's full range of options.

4. Roofing Cants: Provide integral sheet metal roofing cants dimensioned to begin slope at top of roofing system at 1:1 slope; minimum cant height 4 inches.
5. Fabricate curb bottom and mounting flanges for installation directly on metal roof panel system to match slope and configuration of system.
    a. Extend side flange to next adjacent roof panel seam and comply with seam configurations and seal connection, providing at least 6 inch clearance between curb and metal roof panel flange allowing water to properly flow past curb.
    b. Where side of curb aligns with metal roof panel flange, attach fasteners on upper slope of flange to curb connection allowing water to flow past below fasteners, and seal connection.
    c. Maintain at least 12 inch clearance from curb, and lap upper curb flange on underside of down sloping metal roof panel, and seal connection.
    d. Lap lower curb flange overtop of down sloping metal roof panel and seal connection.
6. Provide layouts and configurations indicated on drawings.

C. Curbs Adjacent to Roof Openings: Provide curb on each side of opening, with top of curb horizontal for equipment mounting.
1. Provide preservative treated wood nailers along top of curb.
2. Insulate inside curbs with 1 1/2 inch thick fiberglass insulation.
3. Height Above Finished Roof Surface: 8 inches, minimum.
4. Height Above Roof Deck: 14 inches, minimum.

D. Equipment Rail Curbs: Straight curbs on each side of equipment, with top of curbs horizontal and level with each other for equipment mounting.
1. Provide preservative treated wood nailers along top of rails.
2. Height Above Finished Roof Surface: 8 inches, minimum.
3. Height Above Roof Deck: 14 inches,minimum.
4. Products:
    a. MKT Metal Manufacturing; Equipment Rails: www.mktduct.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Equipment Support: Straight curbs on each side of equipment, with top of curbs parallel with metal roofing system and each other for equipment mounting.
1. Height Above Metal Roofing System: (8) Eight inches, minimum.

F. Pipe, Duct, or Conduit Mounting Curbs: Vertical posts, minimum (12) Twelve inches square.
1. Provide sliding channel welded along top edge with adjustable height steel bracket, fabricated to fit item supported.
2. Provide preservative treated wood nailers over entire top surface, for supports that are provided by others.
3. Height Above Finished Roof Surface: 8 inches minimum.
4. Height Above Roof Deck: As delineated within Contract Documents.

2.02 ROOFTOP MOUNTED GUARDRAILS

A. Rooftop Mounted Guardrails Manufacturers:
1. Safety Rail Company; SRC360 Mobile Safety Rail System: www.safetyrailcompany.com.
2. Substitutions: Reference Setion 01 60 00 - Product Requirements for additional Content.

B. Non Penetrating Rooftop Mounted Guardrails:
1. Provide top and mid railings that comply with 29 CFR 1910.29.
2. Structural Load: 200 lb., minimum, in any direction with components in compliance with 29 CFR 1926.502.
3. Mounting Bases: 104 lb., Class 30, gray iron material cast to hold four receiver posts, with rubber pads on underside.
4. Receiver Posts: Provide with positive locking system for placement in receiver holes of mounting bases that allow rails to be mounted in any direction; provide drain holes in receiver posts.

5. Fixed Ladder Guard System: 36 inch wide passage that extends 7.5 feet onto roof from top of ladder; adjustable spanner bars extend distance another 40 inches from ladder.
6. Steel Surface Finish: Hot-dip zinc galvanized, with color of safety yellow.

2.03 ROOF HATCHES, VENTS

A. Sound Rated Roof Hatch Manufacturers:
1. BILCO Company: www.bilco.com.
2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Roof Hatch Manufacturers:
1. Babcock-Davis; ThermalMAX: www.babcockdavis.com.
2. Bilco Company; Type TB (various types and special size): www.bilco.com.
3. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

C. Flat Roof Access Hatches with Ladder Manufacturers:
1. FAKRO America LLC; Flat Roof Access with DRL Hatch and LML Folding Ladder: www.fakrousa.com.
2. Substitutions: Referene Section 01 60 00 - Product Requirements for additional Content.

D. Explosion Relief Vents: Roof mounted and rated for explosion relief having relief fasteners approved by Factory Mutual, and set on 12-inch high prefabricated aluminum curb with mounting flange.
1. Cover: Insulated aluminum, with R-value of 5.0.
2. Release Rating: At 20 to 30 psf., nominal.
3. Pressure Shock Response: Releases within 12 to 18 milliseconds.
4. Size: As indicated on drawings.

E. Roof Ventilation Louvers: Roof mounted, with drainable louver blades in square profiles.
1. Louver Profile: As delineated within Contract Documents.
2. Size: As delineated within Contract Documents.
3. Material:
4. Products:
   a. CopperCraft:www.coppercraft.com.
   b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Built Up Roofing Vents: Formed aluminum with watertight construction to allow construction below roof membrane to breathe, including attachment flanges.
1. Finish: As selected by Architect from Manufacturer's full range of options.
2. Color: As selected by Achitect from Manufacturer's full range of options.
3. Products:
   a. Menzies Metal Products; Built Up Roof (BUR) Vent: www.menzies-metal.com.
   b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Attic Vents: Dome type; aluminum, color coate, formed to permit installation with shingle roofing and to shed water.
1. Finish: As selected by Architect from Manufacturer's full range of options.
2. Color: As selected by Architect from Manufacturer's full range of options.
3. Products:
   a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

H. Ridge Vents: Factory fabricated, formed panels with integral attachment flanges and snap on cover.
1. Vent Material: 0.040 inch thick aluminum.
2. Perforated Screen: 0.050 inch thick aluminum.
3. Brackets: Manufacturer's standard 20 gauge, 0.0359 inch.
4. Finish: As selected by Architect from Manufacturer's full range of options.

5. Finish Color: As selected by Architect from Manufacturer's full range of options.
6. Products:
    a. Certainteed Roofing; Filtered Ridge Vent - 9 Inch: www.certainteed.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

I. Eave Vents: Factory fabricated, formed panels with integral attachment flanges and snap-on cover.
1. Vent Material: 0.0299 inch steel.
2. Perforated Screen: 0.0239 inch galvanized steel; with 54 percent open area perforation.
3. Finish: As selected by Architect from Manufacturer's full range of options.
4. Finish: Manufacturer's standard polyvinylidene fluoride (PVDF) coating.
5. Finish Color: As selected by Architect from Manufacturr's full range of options.
6. Products:
    a. Atlas Roofing Corporation; Techni-Flo EV Vented Eave Fascia: www.atlasroofing.com.
    b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

J. Flat Roof Access Hatches with Ladder: Factory assembled roof hatch with PVC frame and flat cover and folding metal access ladder, complete with operating and release hardware.
1. Thermally Broken Hatches: Provide insulation within hatch frame and cover.
2. Folding Ladder Access: Triple section ladder, upper roof hatch door with PVC frame and lower insulated door with wood box to enclose and support ladder; 23 1/2 by 47 inch rough opening.

2.04 SMOKE, HEAT VENTS

A. Description: Manufactured units installed in roof assemblies that vent buildings of smoke, heat and gases during building fire events; capable of being operated by mechanically opening automatic means; units with integral roof curbs.

B. Performance Requirements:
1. Units listed and labeled complying with UL 793 and FM 4430.
2. Live Load Capacity: 40 psf, minimum.
    a. Maximum Deflection: 1/150 of span.
3. Wind Uplift Resistance: 30 psf.
4. Acoustical Sound Rated Units:
    a. Outdoor Indoor Transmission Class (OITC) Rating: 46, minimum.
    b. Sound Transmission Class (STC) Rating: 50, minimum.

C. Fusible Link Activation: Provide UL (DIR) listed fusible links with temperature rating of (360) Three Hundred Sixty degrees Fahrenheit.

D. Metal Roof Curbs:

2.05 SNOW GUARDS

A. Unit Snow Guards: Individual projecting polycarbonate shapesand mechanically fastened to roof deck.
1. Wire Loops: Copper wire, 0.135 inch diameter, with copper tabs, 16 oz/sq ft, mill finish.
2. Projecting Metal Shapes: Zinc plated steel, triangular spike design.
3. Projecting Polycarbonate Shapes: Clear polycarbonate plastic with UV stabilizers, semi-circular design.
4. Finish: Coating,color as selected by Architect from Manufacturer's full rang of options.
5. Placement: As delineated within Contract Documents.
6. Products:
    a. Alpine SnowGuards; Snow Bird Hybrid Pad-Style Snow Guard: www.alpinesnowguards.com.
    b. Rocky Mountain Snow Guards, Inc: www.rockymountainsnowguards.com.

c. TRA Snow and Sun: www.trasnowandsun.com.
d. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not commence any Work, this Section, until all substrates have been inspected, properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect immediately, of any unsatisfactory preparation, before proceeding with any Work, this Section.

3.02 INSTALLATION

A. Provide all Work, this Section, in full accordance with Manufacturer's written instructions.

3.03 CLEANING

A. Reference Section 01 70 00 - Execution and Closeout Requirements for additionl Content.

B. Thoroughly clean all Work, this Section

3.04 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 07 84 00
FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of joints and penetrations in fire resistance rated and smoke resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 01 70 00 - Execution and Closeout Requirements:

B. Section 09 21 16 - Gypsum Board Assemblies.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2009 (Reapproved 2016).

B. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2026.

C. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

D. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2024.

E. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestop Systems; 2024.

F. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-Story Test Apparatus; 2025.

G. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; 2024.

H. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2023a, with Editorial Revision (2024).

I. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

J. FM (AG) - FM Approval Guide; Current Edition.

K. FM 4991 - Approval Standard of Firestop Contractors; 2013.

L. ITS (DIR) - Directory of Listed Products; Current Edition.

M. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

N. UL (DIR) - Online Certifications Directory; Current Edition.

O. UL (FRD) - Fire Resistance Directory; Current Edition.

P. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

Q. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Sustainable Design Submittal: Submit VOC content documentation for nonpreformed materials.

E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

G. Certificate from authority having jurisdiction indicating approval of materials used.

H. Manufacturer's qualification statement.

I. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Manufacturer Qualifications: Company specializing in Manufacturing those Products specified within this Section, minimum (15) Fifteen years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Trained by manufacturer.
   2. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
   3. Verification, minimum (15) Fifteen years documented experience installing Work of this type.
   4. Verification, minimum (10) Ten satisfactorily completed projects of comparable size and type.
   5. Licensed by those Local Authorities having Jurisdiction.

1.06 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
   2. Where firestopping is intended to fill a linear opening, install at least 1 linear foot of firestopping.

C. Obtain approval of those Local Authorities having Jurisdicton, before proceeding.

D. If accepted, mock up will represent minimum standard for this Work.

E. **Mock ups may not remain as portion of permanent Work, this particular Project.**

1.07 FIELD CONDITIONS

A. Comply with all firestopping Manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide proper ventilation within all areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Firestopping Manufacturers:
   1. 3M Fire Protection Products: www.3m.com/firestop.
   2. CEMCO; HOTROD Type-X Compressible Firestopping: www.cemcosteel.com.
   3. Hilti, Inc.:www.hilti.com.

4. Tremco Commercial Sealants & Waterproofing; TREMstop Acrylic: www.tremcosealants.com.
5. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Acoustical Smoke Protection Gasket Manufacturers:
1. CEMCO; Sound Gasket: www.cemcosteel.com.
2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 MATERIALS

A. Firestopping Materials: Any materials meeting requirements.

B. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.

C. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.

D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

E. Fire Ratings: Reference Contract Documents for additional Content.

2.03 FIRESTOPPING, ASSEMBLY REQUIREMENTS

A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.
1. Movement: Provide systems that have been tested to show movement capability as indicated.
2. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
3. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
4. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.

B. Head of Wall (HW) Joint System Firestopping at Joints Between Fire Rated Wall Assemblies and Non Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
1. Movement: Provide systems that have been tested to show movement capability as indicated.

C. Floor to Floor (FF), Floor to Wall (FW), Head of Wall (HW), and Wall to Wall (WW) Joints, Except Perimeter, Where Both Are Fire Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
1. Movement: Provide systems that have been tested to show movement capability as indicated.
2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

D. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
3. Watertightness: Provide systems that have been tested to show W Rating as indicated.
4. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

E. Acoustically Rated Firestopping: Provide system tested in accordance with ASTM E90 with STC rating of 50, minimum.

2.04 FIRESTOPPING, PERIMETER CONTAINMENT

A. Perimeter Joint Systems That Have Not Been Tested For Movement Capabilities (Static-S):
   1. 2 Hour Construction: UL System CW-S-0002; Specified Technologies Inc. AS200 Elastomeric Spray.
   2. 2 Hour Construction: UL System CW-S-0002; Specified Technologies Inc. Fast Tack Firestop Spray.
   3. 2 Hour Construction: UL System CW-S-0003; Specified Technologies Inc. Fast Tack Firestop Spray.
   4. 2 Hour Construction: UL System CW-S-0007; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   5. 2 Hour Construction: UL System CW-S-2015; RectorSeal MetaCaulk 1200 Spray.
   6. 2 Hour Construction: UL System CW-S-2017; RectorSeal MetaCaulk 1200 Spray.

B. Perimeter Joint Systems That Have Movement Capabilities (Dynamic-D):
   1. 3 Hour Construction: UL System CW-D-2005; Specified Technologies Inc. Fast Tack Firestop Spray.
   2. 2 Hour Construction: UL System CW-D-1004; Specified Technologies Inc. AS200 Elastomeric Spray.
   3. 2 Hour Construction: UL System CW-D-1004; Specified Technologies Inc. Fast Tack Firestop Spray.
   4. 2 Hour Construction: UL System CW-D-1011; Specified Technologies Inc. Fast Tack Firestop Spray.
   5. 2 Hour Construction: Intertek System BP-120-03; RectorSeal MetaCaulk 1200 Spray.
   6. 2 Hour Construction: Intertek System BP-120-05; RectorSeal MetaCaulk 1200 Spray.
   7. 2 Hour Construction: Intertek System BP-120-09; RectorSeal MetaCaulk 1200 Spray.
   8. 2 Hour Construction: Intertek System BP-120-12; RectorSeal MetaCaulk 1200 Spray.
   9. 2 Hour Construction: Intertek System BP-120-14; RectorSeal MetaCaulk 1200 Spray.
   10. 2 Hour Construction: UL System CW-D-2014; RectorSeal MetaCaulk 1200 Spray.
   11. 2 Hour Construction: UL System CW-D-2016; RectorSeal MetaCaulk 1200 Spray.
   12. 2 Hour Construction: UL System CW-D-2018; RectorSeal MetaCaulk 1200 Spray.
   13. 2 Hour Construction: UL System CW-D-2042; Specified Technologies Inc. Fast Tack Firestop Spray.
   14. 2 Hour Construction: UL System CW-D-2047; RectorSeal MetaCaulk 1200 Spray.
   15. 2 Hour Construction: UL System CW-D-2049; RectorSeal MetaCaulk 1200 Spray.

2.05 FIRESTOPPING, FLOOR TO FLOOR, FLOOR TO WALL, HEAD OF WALL, WALL TO WALL JOINTS

A. Concrete and Concrete Masonry Walls and Floors:
   1. Floor to Floor Joints:
      a. 4 Hour Construction: UL System FF-D-0023; RectorSeal MetaCaulk 150+.
      b. 3 Hour Construction: UL System FF-D-1001; Specified Technologies Inc. SIL Silicone Sealant.
      c. 3 Hour Construction: UL System FF-D-1008; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
      d. 3 Hour Construction: UL System FF-D-1024; RectorSeal MetaCaulk 1200 Spray.
      e. 3 Hour Construction: UL System FF-D-1025; Specified Technologies Inc. AS200 Elastomeric Spray.
      f. 3 Hour Construction: UL System FF-D-1027; RectorSeal MetaCaulk 150+.
      g. 3 Hour Construction: UL System FF-D-1077; RectorSeal MetaCaulk 835+.
      h. 2 Hour Construction: UL System FF-D-0024; RectorSeal MetaCaulk 150+.
      i. 2 Hour Construction: UL System FF-D-0053; RectorSeal MetaCaulk Joint Strip.
      j. 2 Hour Construction: UL System FF-D-0084; RectorSeal MetaCaulk Joint Strip.
      k. 2 Hour Construction: UL System FF-D-1013; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

l. 2 Hour Construction: UL System FF-D-1085; Tremco, TREMstop Acrylic Firestop Sealant.

2. Head of Wall Joints at Concrete/Concrete Masonry Wall to Concrete Over Metal Deck Floor:
   a. 3 Hour Construction: UL System HW-D-0139; Specified Technologies Inc. AS200 Elastomeric Spray.
   b. 2 Hour Construction: UL System HW-D-0039; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   c. 2 Hour Construction: UL System HW-D-0058; RectorSeal MetaCaulk 1200 Spray.
   d. 2 Hour Construction: UL System HW-D-0149; RectorSeal MetaCaulk 150+.
   e. 2 Hour Construction: UL System HW-D-0181; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   f. 2 Hour Construction: UL System HW-D-1037; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
3. Head of Wall Joints at Concrete/Concrete Masonry Wall to Concrete Floor:
   a. 3 Hour Construction: UL System HW-D-0041; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   b. 3 Hour Construction: UL System HW-D-0312; Specified Technologies Inc. SIL Silicone Sealant.
   c. 3 Hour Construction: UL System HW-D-1034; Specified Technologies Inc. AS200 Elastomeric Spray.
   d. 3 Hour Construction: UL System HW-D-1058; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   e. 3 Hour Construction: UL System HW-D-0166; RectorSeal MetaCaulk 1200 Spray.
   f. 2 Hour Construction: UL System HW-D-0268; Hilti CP 606 Flexible Firestop Sealant.
   g. 2 Hour Construction: UL System HW-D-0312; Specified Technologies Inc. SIL Silicone Sealant.
4. Concrete/Concrete Masonry Wall to Wall Joint Systems That Have Not Been Tested For Movement Capabilities (Static-S):
   a. 3 Hour Construction: UL System WW-S-0038; Specified Technologies Inc. SIL Silicone Sealant.
   b. 3 Hour Construction: UL System WW-S-0049; Specified Technologies Inc. SIL Silicone Sealant.
   c. 2 Hour Construction: UL System WW-S-1025; RectorSeal MetaCaulk 835+.
   d. 2 Hour Construction: UL System WW-S-1038; RectorSeal MetaCaulk 835+.
5. Concrete/Concrete Masonry Wall to Wall Joint Systems That Have Movement Capabilities (Dynamic-D):
   a. 4 Hour Construction: UL System WW-D-0054; RectorSeal MetaCaulk Joint Strip.
   b. 3 Hour Construction: UL System WW-D-0023; RectorSeal MetaCaulk 1200 Spray.
   c. 3 Hour Construction: UL System WW-D-0095; RectorSeal MetaCaulk 150+.
   d. 3 Hour Construction: UL System WW-D-1001; Specified Technologies Inc. SIL Silicone Sealant.
   e. 3 Hour Construction: UL System WW-D-1007; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   f. 3 Hour Construction: UL System WW-D-1028; RectorSeal MetaCaulk 1200 Spray.
   g. 3 Hour Construction: UL System WW-D-1037; Specified Technologies Inc. AS200 Elastomeric Spray.
   h. 2 Hour Construction: UL System WW-D-0025; RectorSeal MetaCaulk 1200 Spray.
   i. 2 Hour Construction: UL System WW-D-0027; RectorSeal MetaCaulk 150+.
   j. 2 Hour Construction: UL System WW-D-0110; RectorSeal MetaCaulk 150+.
   k. 2 Hour Construction: UL System WW-D-1077; Tremco, TREMstop Acrylic Firestop Sealant.
   l. 2 Hour Construction: UL System WW-D-0017; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

m. 2 Hour Construction: UL System WW-D-0032; Hilti CP 606 Flexible Firestop Sealant.

B. Gypsum Board Walls:
   1. Wall to Wall Joints That Have Not Been Tested For Movement Capabilities (Static-S):
      a. 2 Hour Construction: UL System WW-S-0063; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      b. 2 Hour Construction: UL System WW-S-0089; RectorSeal MetaCaulk 150+.
      c. 1 Hour Construction: UL System WW-S-0063; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   2. Wall to Wall Joints That Have Movement Capabilities (Dynamic-D):
      a. 3 Hour Construction: UL System WW-D-0101; RectorSeal MetaCaulk 150+.
      b. 2 Hour Construction: UL System WW-D-0180; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      c. 2 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
      d. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
   3. Head of Wall Joints at Underside of Steel Beam and Concrete Over Metal Deck Floor with Sprayed On Fireproofing:
      a. 2 Hour Construction: UL System HW-D-0252; Specified Technologies Inc. AS200 Elastomeric Spray.
      b. 2 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
      c. 1 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   4. Head of Wall Joints at Underside of Flat Concrete:
      a. 4 Hour Construction: UL System HW-D-0108; RectorSeal MetaCaulk 1200 Spray.
      b. 2 Hour Construction: UL System HW-D-0044; Specified Technologies Inc. AS200 Elastomeric Spray.
      c. 2 Hour Construction: UL System HW-D-0079; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
      d. 2 Hour Construction: UL System HW-D-0371; Specified Technologies Inc. SpeedFlex Joint Profile System.
      e. 2 Hour Construction: UL System HW-D-0689; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      f. 2 Hour Construction: UL System HW-D-0696; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      g. 2 Hour Construction: UL System HW-D-0798; RectorSeal Blaze Foam.
      h. 2 Hour Construction: UL System HW-D-1068; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
      i. 2 Hour Construction: UL System HW-D-0757; Hilti CFS-TTS Top Track Seal.
      j. 2 Hour Construction: UL System HW-D-0016; Tremco, TREMstop Acrylic Firestop Sealant.
      k. 2 Hour Construction: UL System HW-D-0017; Tremco, TREMstop Acrylic Firestop Sealant.
      l. 2 Hour Construction: UL System HW-D-1072; Tremco, TREMstop Acrylic Firestop Sealant.
      m. 1 Hour Construction: UL System HW-D-0079; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
      n. 1 Hour Construction: UL System HW-D-0371; Specified Technologies Inc. SpeedFlex Joint Profile System.
      o. 1 Hour Construction: UL System HW-D-0689; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      p. 1 Hour Construction: UL System HW-D-0696; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
      q. 1 Hour Construction: UL System HW-D-1068; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

r. 1 Hour Construction: UL System HW-D-0757; Hilti CFS-TTS Top Track Seal.
s. 1 Hour Construction: UL System HW-D-0016; Tremco, TREMstop Acrylic Firestop Sealant.

5. Head of Wall Joints at Concrete Over Metal Deck:
   a. 2 Hour Construction: UL System HW-D-0034; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   b. 2 Hour Construction: UL System HW-D-0043; Specified Technologies Inc. AS200 Elastomeric Spray.
   c. 2 Hour Construction: UL System HW-D-0099; Specified Technologies Inc. SpeedFlex Joint Profile System.
   d. 2 Hour Construction: UL System HW-D-0144; RectorSeal MetaCaulk 150+.
   e. 2 Hour Construction: UL System HW-D-0363; Specified Technologies Inc. SpeedFlex Joint Profile System.
   f. 2 Hour Construction: UL System HW-D-0365; Specified Technologies Inc. SpeedFlex Joint Profile System.
   g. 2 Hour Construction: UL System HW-D-0548; Specified Technologies Inc. SpeedFlex Joint Profile System.
   h. 2 Hour Construction: UL System HW-D-0749; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   i. 2 Hour Construction: UL System HW-D-0256; Tremco, TREMstop Acrylic Firestop Sealant.
   j. 1 Hour Construction: UL System HW-D-0034; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   k. 1 Hour Construction: UL System HW-D-0099; Specified Technologies Inc. SpeedFlex Joint Profile System.
   l. 1 Hour Construction: UL System HW-D-0363; Specified Technologies Inc. SpeedFlex Joint Profile System.
   m. 1 Hour Construction: UL System HW-D-0365; Specified Technologies Inc. SpeedFlex Joint Profile System.
   n. 1 Hour Construction: UL System HW-D-0548; Specified Technologies Inc. SpeedFlex Joint Profile System.
   o. 1 Hour Construction: UL System HW-D-0749; Specified Technologies Inc. SpeedFlex TTG Track Top Gasket.
   p. 1 Hour Construction: UL System HW-D-0256; Tremco, TREMstop Acrylic Firestop Sealant.
6. Head of Wall Joints at Concrete Over Metal Deck, Wall Parallel to Ribs:
   a. 2 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   b. 2 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   d. 1 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
7. Head of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Cut to Fit Ribs:
   a. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
   b. 2 Hour Construction: UL System HW-D-0103; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
   c. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
8. Head of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Not Cut to Fit:
   a. 2 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
   b. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.

c. 1 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
d. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.

2.06 FIRESTOPPING, FLOOR TO WALL MOVABLE JOINTS

A. Floor To Wall Joint System That Have Movement Capabilities (Dynamic-D):
1. 3 Hour Construction: UL System FW-D-1001; Specified Technologies Inc. SIL Silicone Sealant.
2. 3 Hour Construction: UL System FW-D-1007; Specified Technologies Inc. ES Elastomeric Firestop Sealant.
3. 3 Hour Construction: UL System FW-D-1035; Specified Technologies Inc. AS200 Elastomeric Spray.
4. 2 Hour Construction: UL System FW-D-1069; Tremco, TREMstop Acrylic Firestop Sealant.

2.07 FIRESTOPPING, PENETRATIONS THROUGH CONCRETE, CONCRETE MASONRY CONSTRUCTION

A. Blank Openings:
1. In Floors or Walls:
a. 4 Hour Construction: UL System C-AJ-0042; RectorSeal MetaCaulk Fire Rated Mortar.
b. 4 Hour Construction: UL System C-AJ-0088; RectorSeal MetaCaulk Composite Sheet.
c. 3 Hour Construction: UL System F-A-0031; Specified Technologies Inc. CID Cast-In Devices.
d. 3 Hour Construction: UL System C-AJ-0015; Specified Technologies Inc. SSM Mortar.
e. 3 Hour Construction: UL System C-AJ-0045; RectorSeal MetaCaulk Fire Rated Putty.
f. 3 Hour Construction: UL System C-AJ-0061; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
g. 3 Hour Construction: UL System C-AJ-0113; Specified Technologies Inc. Composite Sheet.
h. 3 Hour Construction: UL System C-AJ-0135; Specified Technologies Inc. FP Intumescent Firestop Plug.
i. 2 Hour Construction: UL System C-AJ-0090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
j. 2 Hour Construction: UL System C-AJ-0015; Specified Technologies Inc. SSM Mortar.
k. 2 Hour Construction: UL System C-AJ-0116; Specified Technologies Inc. Composite Sheet.
l. 2 Hour Construction: UL System C-AJ-0136; Specified Technologies Inc. SSM Mortar.
m. 2 Hour Construction: UL System C-AJ-0171; HoldRite HydroFlame 100 Intumescent Firestop Sealant.

B. Penetrations Through Floors or Walls By:
1. Multiple Penetrations in Large Openings:
a. 2 Hour Construction: UL System C-AJ-2863; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
b. 3 Hour Construction: UL System C-AJ-8016; Specified Technologies Inc. SSM Mortar.
c. 3 Hour Construction: UL System C-AJ-8035; Specified Technologies Inc. SSM Mortar.
d. 3 Hour Construction: UL System C-AJ-8047; RectorSeal MetaCaulk 1000.

e. 3 Hour Construction: UL System C-AJ-8093; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
f. 3 Hour Construction: UL System C-AJ-8181; Specified Technologies Inc. Composite Sheet.
g. 3 Hour Construction: UL System C-AJ-8099; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 3 Hour Construction: UL System C-AJ-8110; Hilti CFS-BL Firestop Block.
i. 3 Hour Construction: UL System C-AJ-8133; RectorSeal Fire Rated Mortar.
j. 2 Hour Construction: UL System C-AJ-8143; Hilti FS-ONE MAX Intumescent Firestop Sealant.
k. 2 Hour Construction: UL System C-AJ-8035; Specified Technologies Inc. SSM Mortar.
l. 2 Hour Construction: UL System C-AJ-8042; RectorSeal MetaCaulk 1000.
m. 2 Hour Construction: UL System C-AJ-8055; Specified Technologies Inc. SSP Firestop Putty.
n. 2 Hour Construction: UL System C-AJ-8093; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
o. 2 Hour Construction: UL System C-AJ-8114; Specified Technologies Inc. SSM Mortar.
p. 2 Hour Construction: UL System C-AJ-8115; Specified Technologies Inc. SSM Mortar.
q. 2 Hour Construction: UL System C-AJ-8129; RectorSeal MetaCaulk 1200 Spray.
r. 2 Hour Construction: UL System C-AJ-8149; RectorSeal MetaCaulk 1000.
s. 2 Hour Construction: UL System C-AJ-8171; RectorSeal MetaCaulk Wrap Strip.
t. 2 Hour Construction: UL System C-AJ-8181; Specified Technologies Inc. Composite Sheet.
u. 2 Hour Construction: UL System C-AJ-8220; Specified Technologies Inc. SSM Mortar.

2. Bathtub Drains:
   a. Up to 3 Hour Construction: UL System F-A-1037, F-A-1038, F-A-2094, or F-A-2095; Hilti CP 681 Tub Box Kit.
   b. Up to 3 Hour Construction: UL System F-A-2183; HoldRite HydroFlame HFPTB-NP 0200, HFPTB-TW-0200, TB-NP-0200, or TB-TW-0200.
3. Uninsulated Metallic Pipe, Conduit, and Tubing:
   a. 3 Hour Construction: UL System C-AJ-1076; RectorSeal MetaCaulk 950.
   b. 3 Hour Construction: UL System C-AJ-1079; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   c. 3 Hour Construction: UL System C-AJ-1089; Specified Technologies Inc. SSM Mortar.
   d. 3 Hour Construction: UL System C-AJ-1184; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   e. 3 Hour Construction: UL System C-AJ-1198; Specified Technologies Inc. SIL Silicone Sealant.
   f. 3 Hour Construction: UL System C-AJ-1215; Specified Technologies Inc. LC Endothermic Firestop Sealant.
   g. 3 Hour Construction: UL System C-AJ-1217; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   h. 3 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   i. 3 Hour Construction: UL System C-AJ-1261; RectorSeal MetaCaulk 1000.
   j. 3 Hour Construction: UL System C-AJ-1320; RectorSeal MetaCaulk 1000.
   k. 3 Hour Construction: UL System C-AJ-1353; Specified Technologies Inc. LCI Intumescent Firestop Sealant.

l. 3 Hour Construction: UL System C-AJ-1421; Hilti FS-ONE MAX Intumescent Firestop Sealant or CP 604 Self-Leveling Firestop Sealant.
m. 3 Hour Construction: UL System C-AJ-1425; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
n. 3 Hour Construction: UL System C-AJ-1718; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
o. 2 and 3 Hour Construction: UL System C-AJ-1696; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
p. 2 Hour Construction: UL System C-AJ-1036; RectorSeal MetaCaulk 950.
q. 2 Hour Construction: UL System C-AJ-1090; Specified Technologies Inc. SSP Firestop Putty.
r. 2 Hour Construction: UL System C-AJ-1186; RectorSeal MetaCaulk 950.
s. 2 Hour Construction: UL System C-AJ-1198; Specified Technologies Inc. SIL Silicone Sealant.
t. 2 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
u. 2 Hour Construction: UL System C-AJ-1240; Specified Technologies Inc. LC Endothermic Firestop Sealant.
v. 2 Hour Construction: UL System C-AJ-1425; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
w. 1 Hour Construction: UL System C-AJ-1039; RectorSeal MetaCaulk 950.

4. Uninsulated Non Metallic Pipe, Conduit, and Tubing:
a. 3 Hour Construction: UL System C-AJ-2842; HoldRite HydroFlame Pipe Collar.
b. 3 Hour Construction: UL System C-AJ-2848; HoldRite HydroFlame Wrap Strip and HydroFlame 200 Intumescent Firestop Sealant.
c. 3 Hour Construction: UL System C-AJ-2851; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
d. 3 Hour Construction: UL System C-AJ-2106; Specified Technologies Inc. SSW Wrap Strips.
e. 3 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
f. 3 Hour Construction: UL System C-AJ-2151; RectorSeal MetaCaulk 1200.
g. 3 Hour Construction: UL System C-AJ-2220; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 3 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSC Collars.
i. 3 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSW Wrap Strips.
j. 3 Hour Construction: UL System C-AJ-2342; Hilti CP-E/S Firestop Wrap Strip.
k. 3 Hour Construction: UL System C-AJ-2661; RectorSeal MetaCaulk 1000.
l. 2 and 3 Hour Construction: UL System C-AJ-2843; HoldRite HydroFlame Pipe Collar.
m. 2 Hour Construction: UL System C-AJ-2047; RectorSeal MetaCaulk 1000.
n. 2 Hour Construction: UL System C-AJ-2167; Hilti FS-ONE MAX Intumescent Firestop Sealant.
o. 2 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
p. 2 Hour Construction: UL System C-AJ-2106; Specified Technologies Inc. SSW Wrap Strips.
q. 2 Hour Construction: UL System C-AJ-2282; Specified Technologies Inc. SSW Wrap Strips.
r. 2 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSC Collars.
s. 2 Hour Construction: UL System C-AJ-2297; Specified Technologies Inc. SSW Wrap Strips.

t. 2 Hour Construction: UL System C-AJ-2298; Specified Technologies Inc. LCC Intumescent Firestop Collars.
u. 2 Hour Construction: UL System C-AJ-2348; RectorSeal MetaCaulk 150+.
v. 2 Hour Construction: UL System C-AJ-2588; Specified Technologies Inc. RTC Range-Taking Collar.
w. 2 Hour Construction: UL System C-AJ-2707; RectorSeal MetaCaulk 1000.
x. 2 Hour Construction: UL System C-AJ-2772; Specified Technologies Inc. SSW Wrap Strips.
y. 2 Hour Construction: UL System C-BJ-2021; Hilti CP 643N Firestop Collar.

5. Electrical Cables Not In Conduit:
   a. 3 Hour Construction: UL System C-AJ-3085; Specified Technologies Inc. LC Endothermic Firestop Sealant.
   b. 3 Hour Construction: UL System C-AJ-3095; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 3 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   d. 3 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSP Firestop Putty.
   e. 3 Hour Construction: UL System C-AJ-3208; Hilti CP 618 Firestop Putty Stick.
   f. 3 Hour Construction: UL System C-AJ-3231; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   g. 3 Hour Construction: UL System C-AJ-3312; Specified Technologies Inc. FP Intumescent Firestop Plug.
   h. 3 Hour Construction: UL System C-AJ-3360; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   i. 2 Hour Construction: UL System C-AJ-3213; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   j. 2 Hour Construction: UL System C-AJ-3213; Specified Technologies Inc. SSC Collars.
   k. 2 Hour Construction: UL System W-J-3046; Specified Technologies Inc. SSP Firestop Putty.
   l. 2 Hour Construction: UL System C-AJ-3154; Specified Technologies Inc. SSP Firestop Putty.
   m. 2 Hour Construction: UL System C-AJ-3216; Hilti CFS-PL Firestop Plug.
   n. 2 Hour Construction: UL System C-AJ-3283; Hilti CP653 Speed Sleeve.
   o. 2 Hour Construction: UL System C-AJ-3283; Hilti CFS-SL SK Firestop Sleeve Kit.
   p. 2 Hour Construction: UL System C-AJ-3283; Hilti CFS-SL SK Firestop Sleeve Kit with Hilti CFS-SL GP Gangplate.
   q. 2 Hour Construction: UL System W-J-3198; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
   r. 2 Hour Construction: UL System W-J-3199; Hilti CFS-SL SK Firestop Sleeve Kit.
   s. 2 Hour Construction: UL System F-A-3085, F-A-3087, F-A-3088, W-J-3277, W-J-3278, W-J-3279, W-L-3481, W-L-3482, W-L-3483, and W-L-3484.; Hilti CFS-MSL L Modular Sleeve.
6. Cable Trays with Electrical Cables:
   a. 3 Hour Construction: UL System C-AJ-4029; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   b. 3 Hour Construction: UL System C-AJ-4093; Hilti CFS-BL Firestop Block.
   c. 2 Hour Construction: UL System C-AJ-4094; Hilti CFS-BL Firestop Block.
7. Electrical Busways:
   a. 3 Hour Construction: UL System C-AJ-6017; Hilti FS-ONE MAX Intumescent Firestop Sealant.
8. Insulated Pipes:

a. 3 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
b. 3 Hour Construction: UL System C-AJ-5410; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
c. 2 Hour Construction: UL System C-AJ-5048; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 601S Elastomeric Firestop Sealant, CP 604 Self-Leveling Firestop Sealant or CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
d. 2 Hour Construction: UL System C-AJ-5087; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
e. 2 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE IMAX Intumescent Firestop Sealant.
f. 2 Hour Construction: UL System C-AJ-5138; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
g. 2 Hour Construction: UL System C-AJ-5313; Specified Technologies Inc. LC Endothermic Firestop Sealant.

9. HVAC Ducts, Uninsulated:
a. 3 Hour Construction: UL System C-AJ-7051; Hilti FS-ONE MAX Intumescent Firestop Sealant.
b. 3 Hour Construction: UL System C-AJ-7204; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
c. 2 Hour Construction: UL System C-AJ-7111; Hilti FS-ONE MAX Intumescent Firestop Sealant.

C. Penetrations Through Floors By:
1. Multiple Penetrations in Large Openings:
a. 4 Hour Construction: UL System F-A-0019; RectorSeal Cast in Place Firestop Device.
b. 3 Hour Construction: UL System F-A-1224; Hilti CFS-CID U Firestop Cast-In Device.
c. 3 Hour Construction: UL System F-A-3052; HoldRite HydroFlame HFP-Px, HFP-PxB, HFP-Mx, or HFP-MxB Cast-In Device.
d. 3 Hour Construction: UL System F-A-8034; HoldRite HydroFlame HFP-P3, or HFP-P3B Cast-In Device.
e. 2 Hour Construction: UL System F-A-0021; RectorSeal Cast-in-Place Firestop Device.
f. 2 Hour Construction: UL System F-A-8012; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade or CFS-S SIL SL Firestop Silicone Sealant Self-Leveling.

2. Uninsulated Metallic Pipe, Conduit, and Tubing:
a. 2 and 3 Hour Construction: UL System F-A-1222; Hilti CFS-CID U Firestop Cast-In Device.
b. 3 Hour Construction: UL System F-A-1110; Specified Technologies Inc. CID Cast-In Device.
c. 3 Hour Construction: UL System F-B-1038; HoldRite HydroFlame HFP-M/P8, HFP-M/P10, or HFP-M/P12 Cast-In Device.
d. 2 Hour Construction: UL System F-A-1110; Specified Technologies Inc. CID Cast-In Device.
e. 2 Hour Construction: UL System F-A-1129; Specified Technologies Inc. Closet Flange Firestop Gasket.

3. Uninsulated Non Metallic Pipe, Conduit, and Tubing:
a. 2 and 3 Hour Construction: UL System F-A-2411; Hilti CFS-CID U Firestop Cast-In Device.
b. 2 and 3 Hour Construction: UL System F-A-2412; Hilti CFS-CID U Firestop Cast-In Device.
c. 3 Hour Construction: UL System F-A-2213; Hilti CFS-DID Drop In Device.

d. 3 Hour Construction: UL System F-A-2192; Specified Technologies Inc. CID Cast In Device.
e. 3 Hour Construction: UL System F-A-2246; Specified Technologies Inc. CID Cast In Device.
f. 3 Hour Construction: UL System F-B-1038; HoldRite HydroFlame HFP-P8, HFP P10, or HFP-P12 Cast-In Device.
g. 2 and 3 Hour Construction: UL System F-A-1133; HoldRite HydroFlame HFP-Px, HFP-PxB Cast In Device.
h. 2 Hour Construction: UL System F-A-2213; Hilti CFS-DID Drop In Device.
i. 2 Hour Construction: UL System F-A-2216; Specified Technologies Inc. Closet Flange Firestop Gasket.
j. 2 Hour Construction: UL System F-A-2246; Specified Technologies Inc. CID Cast In Device.

4. Electrical Cables Not In Conduit:
a. 3 Hour Construction: UL System F-A-3021; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
b. 3 Hour Construction: UL System F-A-3029; Specified Technologies Inc. Ready Sleeve.
c. 3 Hour Construction: UL System F-A-3037; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
d. 3 Hour Construction: UL System F-A-3054; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
e. 2 and 3 Hour Construction: UL System F-A-3091; Hilti CFS-CID U Firestop Cast-In Device.
f. 3 Hour Construction: UL System F-A-3052; HoldRite HydroFlame HFP-Px, HFP PxB, HFP-Mx, or HFP-MxB Cast-In Device.
g. 2 Hour Construction: UL System F-A-3032; Specified Technologies Inc. Ready Split Sleeve.
h. 2 Hour Construction: UL System F-A-3058; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.

5. Electrical Busways:
a. 3 Hour Construction: UL System C-AJ-6017; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun Grade or CFS-S SIL SL Firestop Silicone Sealant Self-Leveling.
b. 2 Hour Construction: UL System F-A-6002; Hilti CP 604 Self-Leveling Firestop Sealant.

6. Insulated Pipes:
a. 2 and 3 Hour Construction: UL System F-A-5083; Hilti CFS-CID U Firestop Cast In Device.
b. 2 and 3 Hour Construction: UL System F-A-5084; Hilti CFS-CID U Firestop Cast In Device.
c. 3 Hour Construction: UL System F-A-5041; Specified Technologies Inc. CID Cast In Device.
d. 3 Hour Construction: UL System F-A-5045; Specified Technologies Inc. CID Cast In Device.
e. 3 Hour Construction: UL System F-A-5013; HoldRite HydroFlame HFP-M/P8, HFP M/P10, or HFP-M/P12 Cast-In Device.
f. 2 and 3 Hour Construction: UL System F-A-5043; HoldRite HydroFlame HFP-Px, or HFP-PxB Cast-In Device.
g. 2 Hour Construction: UL System F-A-5041; Specified Technologies Inc. CID Cast-In Device.
h. 2 Hour Construction: UL System F-A-5045; Specified Technologies Inc. CID Cast-In Device.

D. Penetrations Through Walls By:
1. Uninsulated Metallic Pipe, Conduit, and Tubing:

a. 3 Hour Construction: UL System C-AJ-1700; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
b. 2 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.
c. 1 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2. Electrical Cables Not In Conduit:
   a. 4 Hour Construction: UL System W-J-3142; Specified Technologies Inc. Ready-Sleeve.
   b. 4 Hour Construction: UL System W-J-3157; Specified Technologies Inc. Ready Split Sleeve.
   c. 4 Hour Construction: UL System W-J-3195; Specified Technologies Inc. EZ-Path Series 44 Fire-Rated Pathway.
   d. 2 Hour Construction: UL System C-AJ-3357; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   e. 2 Hour Construction: UL System C-AJ-3095; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   f. 2 Hour Construction: UL System C-AJ-3216; Hilti CFS-PL Firestop Plug.
   g. 2 Hour Construction: UL System W-J-3090; Specified Technologies Inc. SSP Firestop Putty.
   h. 2 Hour Construction: UL System W-J-3098; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   i. 2 Hour Construction: UL System W-J-3130; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
   j. 2 Hour Construction: UL System W-J-3138; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
   k. 2 Hour Construction: UL System W-J-3141; Specified Technologies Inc. Ready-Sleeve.
   l. 2 Hour Construction: UL System W-J-3156; Specified Technologies Inc. Ready Split Sleeve.
   m. 2 Hour Construction: UL System W-J-3158; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
   n. 2 Hour Construction: UL System W-J-3180; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
   o. 2 Hour Construction: UL System W-J-3182; Specified Technologies Inc. Ready Split Sleeve.
   p. 2 Hour Construction: UL System W-J-3182; Specified Technologies Inc. Ready Sleeve.

3. Insulated Pipes:
   a. 2 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 2 Hour Construction: UL System C-AJ-5407; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   d. 1 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   e. 1 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.

4. HVAC Ducts, Uninsulated:
   a. 3 Hour Construction: UL System C-AJ-7204; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-J-7092; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.

c. 2 Hour Construction: UL System W-J-7109; Hilti FS-ONE MAX Intumescent Firestop Sealant, or CP 606 Flexible Firestop Sealant.

5. HVAC Ducts, Insulated:
   a. 2 Hour Construction: UL System W-J-7112; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2.08 FIRESTOPPING, PENETRATIONS THROUGH FRAMED FLOORS

A. Metallic Pipe, Conduit, and Tubing Penetrations in Framed Floors:
   1. 1 and 2 Hour Construction: UL System F-C-1177; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   2. 1 Hour Construction: UL System F-C-1053; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   3. 1 Hour Construction: UL System F-C-1162; Specified Technologies Inc. Closet Flange Firestop Gasket.

B. Non Metallic Pipe, Conduit or Tubing in Framed Floors:
   1. 2 Hour Construction: UL System F-C-2020; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   2. 2 Hour Construction: UL System F-C-2020; Specified Technologies Inc. SSC collars.
   3. 2 Hour Construction: UL System F-C-2348; Specified Technologies Inc. RTC Range Taking Collar.
   4. 2 Hour Construction: UL System F-C-2402; Specified Technologies Inc. Closet Flange Firestop Gasket.
   5. 1 and 2 Hour Construction: UL System F-C-2473; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   6. 1 Hour Construction: UL System F-C-2487; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   7. 1 Hour Construction: UL System F-C-2014; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   8. 1 Hour Construction: UL System F-C-2020; Specified Technologies Inc. LCC Intumescent Firestop Collars.
   9. 1 Hour Construction: UL System F-C-2020; Specified Technologies Inc. SSC Collars.
   10. 1 Hour Construction: UL System F-C-2077; RectorSeal MetaCaulk 1000.
   11. 1 Hour Construction: UL System F-C-2089; RectorSeal MetaCaulk 1000.
   12. 1 Hour Construction: UL System F-C-2130; RectorSeal MetaCaulk 1000.
   13. 1 Hour Construction: UL System F-C-2326; RectorSeal MetaCaulk 350i.
   14. 1 Hour Construction: UL System F-C-2348; Specified Technologies Inc. RTC Range Taking Collar.
   15. 1 Hour Construction: UL System F-C-2402; Specified Technologies Inc. Closet Flange Firestop Gasket.

C. Electrical Cable in Framed Floors:
   1. 1 Hour Construction: UL System F-C-3010; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
   2. 1 and 2 Hour Construction: UL System F-C-3121; HoldRite HydroFlame 200 Intumescent Firestop Sealant.

D. Insulated Pipe in Framed Floors:
   1. 2 Hour Construction: UL System F-C-5090; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
   2. 1 Hour Construction: UL System F-C-5043; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).

2.09 FIRESTOPPING, PENETRATIONS THROUGH GYPSUM BOARD WALLS

A. Blank Openings:
   1. 4 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.

2. 3 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
3. 2 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
4. 2 Hour Construction: UL System W-L-0032; Specified Technologies Inc. FP Intumescent Firestop Plug.
5. 2 Hour Construction: UL System W-L-0038; Specified Technologies Inc. FP Intumescent Firestop Plug.
6. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
7. 1 Hour Construction: UL System W-L-0020; Specified Technologies Inc. Composite Sheet.
8. 1 Hour Construction: UL System W-L-0032; Specified Technologies Inc. FP Intumescent Firestop Plug.
9. 1 Hour Construction: UL System W-L-0038; Specified Technologies Inc. FP Intumescent Firestop Plug.
10. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.

B. Penetrations By:
   1. Multiple Penetrations in Large Openings:
      a. 2 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.
      c. 2 Hour Construction: UL System W-L-8025; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
      d. 2 Hour Construction: UL System W-L-8050; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
      e. 2 Hour Construction: UL System W-L-8071; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      f. 2 Hour Construction: UL System W-L-8073; Specified Technologies Inc. Composite Sheet.
      g. 2 Hour Construction: UL System W-L-8079; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      h. 1 and 2 Hour Construction: UL System W-L-1568; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
      i. 1 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      j. 1 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.
      k. 1 Hour Construction: UL System W-L-8025; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
      l. 1 Hour Construction: UL System W-L-8050; Specified Technologies Inc. SSB Intumescent Firestop pillows.
      m. 1 Hour Construction: UL System W-L-8071; Hilti FS-ONE MAX Intumescent Firestop Sealant.
      n. 1 Hour Construction: UL System W-L-8073; Specified Technologies Inc. Composite Sheet.
      o. 1 Hour Construction: UL System W-L-8079; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   2. Uninsulated Metallic Pipe, Conduit, and Tubing:
      a. 3 and 4 Hour Construction: UL System W-L-1560; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
      b. 2 Hour Construction: UL System W-L-1033; Specified Technologies Inc. SIL Silicone Sealant.
      c. 2 Hour Construction: UL System W-L-1042; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).

d. 2 Hour Construction: UL System W-L-1049; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
e. 2 Hour Construction: UL System W-L-1090; Specified Technologies Inc. LC Endothermic Firestop Sealant.
f. 2 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
g. 2 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
h. 2 Hour Construction: UL System W-L-1222; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
i. 2 Hour Construction: UL System W-L-1477; Specified Technologies Inc. EZ Firestop Grommet.
j. 2 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.
k. 1 and 2 Hour Construction: UL System W-L-1558; HoldRite HydroFlame 100 Intumescent Firestop Sealant.
l. 1 and 2 Hour Construction: UL System W-L-1558; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
m. 1 Hour Construction: UL System W-L-1042; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
n. 1 Hour Construction: UL System W-L-1049; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
o. 1 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
p. 1 Hour Construction: UL System W-L-1090; Specified Technologies Inc. LC Endothermic Firestop Sealant.
q. 1 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
r. 1 Hour Construction: UL System W-L-1222; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
s. 1 Hour Construction: UL System W-L-1477; Specified Technologies Inc. EZ Firestop Grommet.
t. 1 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.

3. Uninsulated Non Metallic Pipe, Conduit, and Tubing:
a. 4 Hour Construction: UL System W-L-2704; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
b. 2 Hour Construction: UL System W-L-2048; Specified Technologies Inc. SSW Wrap Strips.
c. 2 Hour Construction: UL System W-L-2074; Specified Technologies Inc. SSC Collars.
d. 2 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
e. 2 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
f. 2 Hour Construction: UL System W-L-2237; Specified Technologies Inc. LCC Intumescent Firestop Collars.
g. 2 Hour Construction: UL System W-L-2241; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
h. 2 Hour Construction: UL System W-L-2243; Specified Technologies Inc. SSW Wrap Strips.
i. 2 Hour Construction: UL System W-L-2493; Specified Technologies Inc. RTC Range-Taking Collar.
j. 1 and 2 Hour Construction: UL System W-L-2710; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
k. 1 Hour Construction: UL System W-L-2048; Specified Technologies Inc. SSW Wrap Strips.

l. 1 Hour Construction: UL System W-L-2074; Specified Technologies Inc. SSC Collars.
m. 1 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
n. 1 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
o. 1 Hour Construction: UL System W-L-2237; Specified Technologies Inc. LCC Intumescent Firestop Collars.
p. 1 Hour Construction: UL System W-L-2241; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
q. 1 Hour Construction: UL System W-L-2243; Specified Technologies Inc. SSW Wrap Strips.
r. 1 Hour Construction: UL System W-L-2493; Specified Technologies Inc. RTC Range Taking Collar.

4. Electrical Cables Not In Conduit:
a. 4 Hour Construction: UL System W-L-3276; Specified Technologies Inc. Ready-Sleeve.
b. 4 Hour Construction: UL System W-L-3304; Specified Technologies Inc. Ready Split Sleeve.
c. 4 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
d. 3 Hour Construction: UL System W-L-3276; Specified Technologies Inc. Ready Sleeve.
e. 3 Hour Construction: UL System W-L-3304; Specified Technologies Inc. Ready Split Sleeve.
f. 3 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
g. 2 Hour Construction: UL System W-L-3024; Specified Technologies Inc. SSP Firestop Putty.
h. 2 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
i. 2 Hour Construction: UL System W-L-3076; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
j. 2 Hour Construction: UL System W-L-3084; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
k. 2 Hour Construction: UL System W-L-3135; Specified Technologies Inc. SSP Firestop Putty.
l. 2 Hour Construction: UL System W-L-3169; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
m. 2 Hour Construction: UL System W-L-3218; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.
n. 2 Hour Construction: UL System W-L-3255; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
o. 2 Hour Construction: UL System W-L-3256; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
p. 2 Hour Construction: UL System W-L-3265; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.
q. 2 Hour Construction: UL System W-L-3303; Specified Technologies Inc. Ready Split Sleeve.
r. 2 Hour Construction: UL System W-L-3306; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
s. 2 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
t. 2 Hour Construction: UL System W-L-3350; Specified Technologies Inc. LC Endothermic Firestop Sealant.

u. 2 Hour Construction: UL System W-L-3357; Specified Technologies Inc. FP Intumescent Firestop Plug.
v. 2 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Split Sleeve.
w. 2 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Sleeve.
x. 2 Hour Construction: UL System W-L-3369; Specified Technologies Inc. EZ Firestop Grommet.
y. 2 Hour Construction: UL System W-L-3370; Specified Technologies Inc. EZ Firestop Grommet.
z. 2 Hour Construction: UL System W-L-3374; Specified Technologies Inc. FP Intumescent Firestop Plug.
aa. 2 Hour Construction: UL System W-L-3376; Specified Technologies Inc. Ready Sleeve.
bb. 2 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
cc. 2 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.
dd. 2 Hour Construction: UL System W-L-3378; Specified Technologies Inc. EZ Firestop Grommet.
ee. 2 Hour Construction: UL System W-L-3379; Specified Technologies Inc. EZ Firestop Grommet.
ff. 2 Hour Construction: UL System W-L-3390; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
gg. 2 Hour Construction: UL System W-L-3393; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
hh. 2 Hour Construction: UL System W-L-3395; Hilti CP653 Speed Sleeve.
ii. 2 Hour Construction: UL System W-L-3395; Hilti CFS-SL SK Firestop Sleeve Kit.
jj. 2 Hour Construction: UL System W-L-3395; Hilti CFS-SL SK Firestop Sleeve Kit with Hilti CFS-SL GP Gangplate.
kk. 2 Hour Construction: UL System W-L-3414; Hilti CFS-D Firestop Cable Disc.
ll. 1 and 2 Hour Construction: UL System W-L-3453; HoldRite HydroFlame 200 Intumescent Firestop Sealant.
mm. 1 Hour Construction: UL System W-L-3024; Specified Technologies Inc. SSP Firestop Putty.
nn. 1 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
oo. 1 Hour Construction: UL System W-L-3076; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
pp. 1 Hour Construction: UL System W-L-3084; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
qq. 1 Hour Construction: UL System W-L-3135; Specified Technologies Inc. SSP Firestop Putty.
rr. 1 Hour Construction: UL System W-L-3169; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
ss. 1 Hour Construction: UL System W-L-3218; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.
tt. 1 Hour Construction: UL System W-L-3255; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
uu. 1 Hour Construction: UL System W-L-3256; Specified Technologies Inc. EZ Path Series 22 Fire-Rated Pathway.
vv. 1 Hour Construction: UL System W-L-3265; Specified Technologies Inc. EZ Path Series 33 Fire-Rated Pathway.

ww. 1 Hour Construction: UL System W-L-3303; Specified Technologies Inc. Ready Split Sleeve.
xx. 1 Hour Construction: UL System W-L-3306; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
yy. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
zz. 1 Hour Construction: UL System W-L-3350; Specified Technologies Inc. LC Endothermic Firestop Sealant.
aaa. 1 Hour Construction: UL System W-L-3357; Specified Technologies Inc. FP Intumescent Firestop Plug.
bbb. 1 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Split Sleeve.
ccc. 1 Hour Construction: UL System W-L-3358; Specified Technologies Inc. Ready Sleeve.
ddd. 1 Hour Construction: UL System W-L-3369; Specified Technologies Inc. EZ Firestop Grommet.
eee. 1 Hour Construction: UL System W-L-3370; Specified Technologies Inc. EZ Firestop Grommet.
fff. 1 Hour Construction: UL System W-L-3374; Specified Technologies Inc. FP Intumescent Firestop Plug.
ggg. 1 Hour Construction: UL System W-L-3376; Specified Technologies Inc. Ready-Sleeve.
hhh. 1 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 22 Fire-Rated Pathway.
iii. 1 Hour Construction: UL System W-L-3377; Specified Technologies Inc. EZ-Path Series 33 Fire-Rated Pathway.
jjj. 1 Hour Construction: UL System W-L-3378; Specified Technologies Inc. EZ Firestop Grommet.
kkk. 1 Hour Construction: UL System W-L-3379; Specified Technologies Inc. EZ Firestop Grommet.
lll. 1 Hour Construction: UL System W-L-3390; Specified Technologies Inc. EZ Path Series 44 Fire-Rated Pathway.
mmm. 1 Hour Construction: UL System W-L-3393; Hilti CFS-SL RK Retrofit Sleeve Kit for Existing Cables.
nnn. 1 Hour Construction: UL System W-L-3414; Hilti CFS-D Firestop Cable Disc.

5. Cable Trays with Electrical Cables:
   a. 2 Hour Construction: UL System W-L-4008; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   b. 2 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.
   c. 2 Hour Construction: UL System W-L-4060; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   d. 1 Hour Construction: UL System W-L-4008; Specified Technologies Inc. SSB Intumescent Firestop Pillows.
   e. 1 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.
   f. 1 Hour Construction: UL System W-L-4060; Hilti FS-ONE MAX Intumescent Firestop Sealant.
6. Insulated Pipes:
   a. 2 Hour Construction: UL System W-L-5014; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   c. 2 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
   d. 2 Hour Construction: UL System W-L-5121; Specified Technologies Inc. LCI Intumescent Firestop Sealant.

e. 2 Hour Construction: UL System W-L-5273; Specified Technologies Inc. LC Endothermic Firestop Sealant.
f. 2 Hour Construction: UL System W-L-5298; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
g. 1 Hour Construction: UL System W-L-5014; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
h. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
i. 1 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
j. 1 Hour Construction: UL System W-L-5121; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
k. 1 Hour Construction: UL System W-L-5273; Specified Technologies Inc. LC Endothermic Firestop Sealant.
l. 1 Hour Construction: UL System W-L-5298; Specified Technologies Inc. WF300 Intumescent Firestop Caulk (For Wood Frame Construction).
m. 1 and 2 Hour Construction: UL System W-L-5357; HoldRite HydroFlame 200 Intumescent Firestop Sealant.

7. HVAC Ducts, Insulated:
   a. 2 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.
   b. 2 Hour Construction: UL System W-L-7164; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   c. 2 Hour Construction: UL System W-L-7238; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   d. 1 Hour Construction: UL System W-L-7164; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   e. 1 Hour Construction: UL System W-L-7238; Specified Technologies Inc. FyreFlange HVAC Firestop Angle.
   f. 1 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.
8. Shower Valve Penetration, Uninsulated:
   a. 1 and 2 Hour Construction: UL System W-L-7325; Fire Shield, LLC; Barri-Ring.
   b. 1 and 2 Hour Construction: UL System W-L-7249; Fire Shield, LLC; Barri-Box.
9. Wall Penetration Box, Uninsulated:
   a. 1 and 2 Hour Construction: UL System W-L-7248; Fire Shield, LLC; Barricade.

2.10 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.
   2. Fire Ratings: See drawings for required systems and ratings.

B. Firestopping at Uninsulated Metallic Pipe and Conduit Penetrations, of diameter 4 inches or less: Caulk or putty.
   1. Stairway Walls: UL Design No. as delineated within Contract Documents.

C. Firestopping at Cable Tray Penetrations: Any material meeting requirements.

D. Firestopping at Cable Penetrations, not in Conduit or Cable Tray: Caulk or putty.

E. Firestopping at Control Joints (without Penetrations): Any material meeting requirements.

F. Firestopping Between Edge of Floor Slab and Curtain Wall without Penetrations: Fiber firestopping with smoke seal coating; UL (FRD) Design No. as indicated on drawings, T Rating 3/4 hour.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all openings are ready to receive Work, this Section, prior to commencng same.

3.02 PREPARATION

A. Thoroughly clean all substrate surfaces of any elements that might adversely affect bond of firestopping material.

B. Remove all incompatible materials that may adversely affect bond.

C. Install all necessary backing materials, as required to prevent any liquid material leakage.

3.03 INSTALLATION

A. Install all materials only in manner described within Fire Test Report and full accordance with Manufacturer's instructions.

B. **Do not** cover any installed firestopping, until inspected by Independent Testing Agency.

C. **Do not** cover any installed firestopping, until inspected by those Local Authorities having Jurisdiction.

D. Install all labeling, as required by code.

3.04 FIELD QUALITY CONTROL

A. Independent Testing Agency: An independent Inspection Agency will examine all penetration firestopping in accordance with ASTM E2174 and ASTM E2393.

B. Replace all penetration firestopping, joints at those locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING

A. Thoroughly clean all Work, this Section.

3.06 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Spray applied joint sealants.

B. Nonsag gunnable joint sealants.

C. Self leveling pourable joint sealants.

D. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 21 16 - Gypsum Board Assemblies.

B. Section 09 30 00 - Tiling.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants; 2018 (Reapproved 2022).

C. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

D. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.

E. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2024.

F. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

G. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems; 2023.

H. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

I. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

J. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.

K. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2023.

L. ASTM C1382 - Standard Test Method for Determining Tensile Adhesion Properties of Sealants when Used in Exterior Insulation and Finishing Systems (EIFS) Joints; 2016 (Reapproved 2023).

M. ASTM C1521 - Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints; 2019 (Reapproved 2020).

N. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).

O. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2022.

P. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics; 2023.

Q. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

R. ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers; 2022.

S. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

T. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2026.

U. SCAQMD 1168 - Adhesive and Sealant Applications; 1989, with Amendment (2022).

V. SWRI (VAL) - SWR Institute Validated Products Directory; Current Edition.

W. UL 263 - Standard for Fire Tests of Building Construction and Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Backing material recommended by sealant Manufacturer.
   4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   5. Substrates the product should not be used on.
   6. Substrates for which use of primer is required.
   7. Substrates for which laboratory adhesion and/or compatibility testing is required.
   8. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
   9. Provide detailed Sample Warranty documentation, particular to this Project.
   10. Certification by manufacturer indicating that product complies with specification requirements.
   11. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.

C. Product Data for Accessory Products: Submit Manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

F. Sustainable Design Documentation: For sealants and primers, submit deailed VOC content and emissions documentation.

G. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

H. Installation Plan: Submit at least four weeks prior to start of installation.

I. Preinstallation Field Adhesion Test Plan: Submit at least two weeks prior to start of installation.

J. Field Quality Control Plan: Submit at least two weeks prior to start of installation.

K. Preinstallation Field Adhesion Test Reports: Submit filled out Preinstallation Field Adhesion Test Reports log within 10 days after completion of tests; include bagged test samples and photographic records.

L. Installation Log: Submit filled out log for each length or instance of sealant installed.

M. Field Quality Control Log: Submit filled-out log for each length or instance of sealant installed, within 10 days after completion of inspections/tests; include bagged test samples and photographic records, if any.

N. Manufacturer's qualification statement.

O. Installer's qualification statement.

P. Executed warranty.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum 10 years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

E. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, backing, and accessories.
   1. Adhesion Testing: In accordance with ASTM C794.
   2. Compatibility Testing: In accordance with ASTM C1087.
   3. Stain Testing: In accordance with ASTM C1248; required only for stone substrates.
   4. Allow sufficient time for testing to avoid delaying the work.
   5. Deliver sufficient samples to manufacturer for testing.
   6. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
   7. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

F. Installation Plan: Include schedule of sealed joints, including the following:
   1. Joint width as identified within Contract Documents.
   2. Joint depth as delineated wtihin Contract Documents.
   3. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgment that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.
   4. Approximate date of installation, for evaluation of thermal movement influence.
   5. Installation Log Form: Include the following data fields, with known information filled out.
      a. Unique identification of each length or instance of sealant installed.
      b. Location on project.
      c. Substrates.
      d. Sealant used.
      e. Stated movement capability of sealant.
      f. Primer to be used, or indicate no primer is used.
      g. Size and actual backing material used.
      h. Date of installation.
      i. Name of installer.
      j. Actual joint width; provide space to indicate maximum and minimum width.
      k. Actual joint depth to face of backing material at centerline of joint.
      l. Air temperature.

G. Preinstallation Field Adhesion Test Plan: Include destructive field adhesion testing of one sample of each combination of sealant type and substrate, except interior acrylic latex sealants, and include the following for each tested sample.
   1. Identification of testing agency.
   2. Name(s) of sealant Manufacturer's field representatives who will be observing.
   3. Preinstallation Field Adhesion Test Log Form: Include the following data fields, with known information filled out.
      a. Substrate; if more than one type of substrate is involved in a single joint, provide two entries on form, for testing each sealant substrate side separately.
      b. Test date.

c. Location on project.
d. Sealant used.
e. Stated movement capability of sealant.
f. Test method used.
g. Date of test.
h. Copy of test method documents.
i. Age of sealant upon date of testing.
j. Test results, modeled after the sample form in the test method document.
k. Indicate use of photographic record of test.

H. Field Quality Control Plan:
1. Visual inspection of entire length of sealant joints.
2. Nondestructive field adhesion testing of sealant joints, except interior acrylic latex sealants.
a. For each different sealant and substrate combination, allow for one test every 12 inches in the first 10 linear feet of joint and one test every 12 inches thereafter.
b. If any failures occur in the first 10 linear feet, continue testing at 12 inch intervals at no extra cost to Owner.
3. Field testing agency's qualifications.
4. Field Quality Control Log Form: Show same data fields as on Preinstallation Field Adhesion Test Log, with known information filled out and lines for multiple tests per sealant/substrate combinations; include visual inspection and specified field testing; allow for possibility that more tests than minimum specified may be necessary.

I. Field Adhesion Test Procedures:
1. Allow sealants to fully cure as recommended by manufacturer before testing.
2. Have a copy of the test method document available during tests.
3. Take photographs or make video records of each test, with joint identification provided in the photos/videos; for example, provide small erasable whiteboard positioned next to joint.
4. Record the type of failure that occurred, other information required by test method, and the information required on the Field Quality Control Log.
5. When performing destructive tests, also inspect the opened joint for proper installation characteristics recommended by manufacturer, and report any deficiencies.
6. Deliver the samples removed during destructive tests in separate sealed plastic bags, identified with project, location, test date, and test results, to Owner.
7. If any combination of sealant type and substrate does not show evidence of minimum adhesion or shows cohesion failure before minimum adhesion, report results to Architect.

J. Nondestructive Field Adhesion Test: Test for adhesion in full accordance with ASTM C1521, using Nondestructive Spot Method.
1. Record results on Field Quality Control Log.
2. Repair failed portions of joints.

K. Destructive Field Adhesion Test: Test for adhesion in full accordance with ASTM C1521, using Destructive Tail Procedure.
1. Sample: Provide (2) Two Product Samples, minimum (18) Eighteen inches long, as required to accurately illustrate construction, color and sheen.
2. Minimum Elongation Without Adhesive Failure: Consider the tail at rest, not under any elongation stress; multiply the stated movement capability of the sealant in percent by two; then multiply 1 inch by that percentage; if adhesion failure occurs before the 1-inch mark is that distance from the substrate, the test has failed.
3. If either adhesive or cohesive failure occurs before minimum elongation, take necessary measures to correct conditions and retest; record each modification to products or installation procedures.
4. Record all results upon Field Quality Control Log.
5. Replace all failed portions of joints.

L. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or another applicable method as recommended by manufacturer.

1.06 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Manufacturer Warranty: Provide (20) Twenty Year Manufacturer's Warranty for all installed sealants, accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete all forms within Owner's name and register with said Manufacturer.

C. Replace all defective Work immediately.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Spray Applied Sealants:
   1. CertainTeed Corporation:www.certainteed.com.
   2. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

B. Nonsag Sealants:
   1. Adfast USA In.: www.adfastcorp.com.
   2. Dow: www.dow.com.
   3. W. R. Meadows, Inc.:www.wrmeadows.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Self Leveling Sealants:
   1. Bostik Inc.: www.bostik-us.com.
   2. QUIKRETE Companies: www.quikrete.com.
   3. Sherwin-Williams Company: www.sherwin-williams.com.
   4. Sika Corporation: www.usa.sika.com.
   5. W. R. Meadows, Inc.: www.wrmeadows.com.
   6. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
   1. Exterior Joints:
      a. Seal open joints except open joints indicated on drawings as not sealed.
      b. Seal the following joints:
         1) Wall expansion and control joints.
         2) Joints between doors, windows, and other frames or adjacent construction.
         3) Joints between different exposed materials.
   2. Interior Joints:
      a. Seal open joints except specific open joints indicated on drawings as not sealed.
      b. Seal the following joints:
         1) Joints between door frames and window frames and adjacent construction.
   3. Do Not Seal:
      a. Joints indicated to be covered with expansion joint cover assemblies.
      b. Joints where sealant is specified to be furnished and installed by Manufacturer of product to be sealed.
      c. Joints where sealant installation is specified in other sections.
      d. Joints between suspended ceilings and walls.

2.03 JOINT SEALANTS, GENERAL

A. Sealants and Primers: Provide products with acceptable levels of volatile organic compound (VOC) content; see Section 01 61 16.

B. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

C. Colors: As selected by Architect from Manufacturer's full range of options.

2.04 SPRAY APPLIED, JOINT SEALANTS

A. Spray Applied Water Based Acrylic Latex Sealant: For interior applications, spray applied, fast drying, premixed acrylic latex sealant, intended for air sealing penetrations and joints.
   1. Surface Burning Characteristics: Smoke developed index of 450 or less, and flame spread index of 25 or less, Class A, when tested in full accordance with ASTM E84.
   2. Spray Equipment: Use rate of application and methods as recommended by Manufacturer.
   3. Wood Adhesion: Passes ASTM D4541, without pulling back, shrinking, or cracking.
   4. Color: As selected by Architect from Manufacturer's full range of options.
   5. Products:
      a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.05 NONSAG, JOINT SEALANTS

2.06 ACCESSORIES

A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.

B. Sealant Backing Rod, Closed Cell Type:
   1. Cylindrical flexible sealant backings complying with ASTM C1330 Type C.
   2. Size: 25 to 50 percent larger in diameter than joint width.
   3. Products:
      a. Nomaco, Inc; HBR: www.nomaco.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Sealant Backing Rod, Open Cell Type:
   1. Cylindrical flexible sealant backings complying with ASTM C1330 Type O.
   2. Size: 25 to 50 percent larger in diameter than joint width.
   3. Products:
      a. Nomaco, Inc; OCFoam: www.nomaco.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Sealant Backing Rod, Bi Cellular Type:
   1. Cylindrical flexible sealant backings complying with ASTM C1330 Type B.
   2. Size: 25 to 50 percent larger in diameter than joint width.
   3. Products:
      a. Adfast USA Inc; Adseal BR-2600 Backer Rod: www.adfastcorp.com.
      b. Nomaco, Inc; SOF Rod: www.nomaco.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Overlay Extrusion for Glazing System Joint Protection: Rubber profiled extrusions placed over joints in glazing system and provided with watertight seal.
   1. Profile: As indicated witihin Contract Documents.
   2. Color: As selected by Architect from Manufacturer's full range of options.
   3. Durometer Hardness, Type A: 65, minimum, when tested in accordance with ASTM D2240.
   4. Tensile Strength: 1,139 psi, in accordance with ASTM D412.
   5. Products:
      a. Tremco Commercial Sealants & Waterproofing; Spectrem Restoratoin Overlay: www.tremcosealants.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Preformed Extruded Silicone Joint Seal: Pre-cured low-modulus silicone extrusion, in sizes to fit applications indicated on drawings, combined with a neutral-curing liquid silicone sealant for bonding joint seal to substrates.
1. Size: 1 inch wide, in rolls 100 feet long.
2. Thickness: 0.78 inch, with ridges along outside bottom edges for bonding area.
3. Color: As selected by Architect from Manufacturer's full range of options.
4. Durometer Hardness, Type A: 26 to 32, minimum, when tested in accordance with ASTM D2240.
5. Tensile Strength: 218 psi, in accordance with ASTM D412.
6. Elongation at Break: 554 percent, in accordance with ASTM D412.
7. Products:
a. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Preformed Extruded Polyurethane Joint Seal: Medium-modulus, preformed polyurethane extrusion used to bridge joints under elastomeric wall coatings, in sizes to fit applications indicated on drawings, combined with polyurethane sealant for bonding joint seal to substrates.
1. Size: 1-1/2 inch wide, in rolls 100 feet long.
2. Thickness: 0.051 inch, with ridges along outside bottom edges for bonding area.
3. Color: As selected by Architect from Manufacturer's full range of options.
4. Durometer Hardness, Type A: 55, minimum, when tested in accordance with ASTM D2240.
5. Tensile Strength: 532 psi, in full accordance with ASTM D412.
6. Elongation at Break: 690 percent, in full accordance with ASTM D412.
7. Products:
a. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

H. Backing Tape: Self adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

I. Masking Tape: Self adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

J. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

K. Primers: That type, as recommended by sealant Manufacturer, as required to suit application, this particular Project and nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Confirm all joints are ready to receive Work, Section, prior to beginning same.

B. Verify all backing materials are compatible with said sealants, prior to commencing any Work, this Section.

C. Confirm all backer rods are correct size, prior to starting any Work, this Section.

D. Preinstallation Adhesion Testing: Install a sample for each test location, as indicated within Contract Documents.
1. Test each sample as specified in PART 1 under QUALITY ASSURANCE article.
2. Notify Architect of date and time that tests will be performed, at least seven days in advance.
3. Arrange for sealant Manufacturer's technical representative to be present during tests.
4. Record each test on Preinstallation Adhesion Test Log as indicated.

5. If any sample fails, review products and installation procedures, consult Manufacturer, or take other measures that are necessary to ensure adhesion; retest in a different location; if unable to obtain satisfactory adhesion, report to Architect.
6. After completion of tests, remove remaining sample material and prepare joints for new sealant installation.
7. **Protect all Work, this Section, from Damage.**
8. **Replace all Damaged Work, this Section, immediately.**

3.02 PREPARATION

A. Remove all loose materials, foreign matter that might impair adhesion of sealant.

B. Thoroughly clean all joints, prime as necessary, in full accordance with Manufacturer's instructions.

C. Perform all preparation in full accordance with Manufacturer's instructions and ASTM C1193.

D. Mask all elements, surfaces adjacent joints from any damage, disfigurement ,due to sealant Work.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area, as required to verify it does not stain, discolor slab.

3.03 INSTALLATION, PROTECTION

A. Install all Work, this Section, in full accordance with sealant Manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations fully complying with ASTM C1193.

C. Install acoustical sealant application Work in full accordance with ASTM C919.

D. Measure all joint dimensions, size joint backers as required to achieve width to depth ratio, neck dimension and surface bond area recommended by Manufacturer.

E. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
1. Width/depth ratio of 2:1.
2. Neck dimension no greater than 1/3 of the joint width.
3. Surface bond area on each side not less than 75 percent of joint width.

F. Install bond breaker backing tape where backer rod cannot be used.

G. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

H. **Do not** install sealant when ambient temperature is outside Manufacturer's recommended temperature range, or will be outside that range during the entire curing period.

I. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

J. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

K. **Protect all Work, this Section, from Damage.**

L. **Replace all Damaged Work, this Section, immediately.**

3.04 FIELD QUALITY CONTROL

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Owner shall employ an independent testing agency to perform field quality control inspection and testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Perform field quality control inspection, testing accordingly.

D. Replace all failed portions of sealants, using same materials and procedures as indicated for original installation.

E. Replace any destructive test location damage immediately after evaluation and recording of said results.

3.05 POST OCCUPANCY

A. Post Occupancy Inspection: Perform visual inspection of entire Scope of Work, this particular Project, at a time when all sealant joints have opened to their greatest width. Report all failures and immediately replace same.

END OF SECTION

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SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non fire rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Fire rated hollow metal doors and frames.

D. Thermally insulated hollow metal doors with frames.

E. Sound rated hollow metal doors and frames.

F. Commercial security hollow metal doors and frames.

G. Detention security hollow metal doors and frames.

H. Blast resistant hollow metal doors and frames.

I. Hurricane resistant hollow metal doors and frames.

J. Tornado resistant hollow metal doors and frames.

K. Hollow metal borrowed lites glazing frames.

1.02 RELATED REQUIREMENTS

A. Section 08 71 01 - Door Hardware Groups.

B. Section 08 80 00 - Glazing.

C. Section 09 91 13 - Exterior Painting.

D. Section 09 91 23 - Interior Painting.

1.03 ABBREVIATIONS, ACRONYMS

A. ANSI: American National Standards Institute.

B. ASCE: American Society of Civil Engineers.

C. HMMA: Hollow Metal Manufacturers Association.

D. NAAMM: National Association of Architectural Metal Manufacturers.

E. NFPA: National Fire Protection Association.

F. SCIF: Sensitive Compartmented Information Facility.

G. SDI: Steel Door Institute.

H. UL: Underwriters Laboratories.

1.04 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY "...

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames; 2025.

C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2024.

D. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2024.

E. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

F. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2025.

G. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

H. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip; 2025a.

I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

J. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

K. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2024.

L. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

M. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2020.

N. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

O. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

P. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

Q. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

R. ASTM E336 - Standard Test Method for Measurement of Airborne Sound Attenuation Between Rooms in Buildings; 2025a.

S. ASTM E413 - Classification for Rating Sound Insulation; 2022.

T. ASTM E1332 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation; 2022.

U. ASTM F1450 - Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention and Correctional Facilities; 2012a (Reapproved 2019).

V. ASTM F2247 - Standard Test Method for Metal Doors Used in Blast Resistant Applications (Equivalent Static Load Method); 2018.

W. ASTM F2927 - Standard Test Method for Door Systems Subject to Airblast Loadings; 2021.

X. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

Y. FBC TAS 201 - Impact Test Procedures; Testing Application Standard; 1994.

Z. FBC TAS 202 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure; Testing Application Standard; 1994.

AA. FBC TAS 203 - Criteria for Testing Products Subject To Cyclic Wind Pressure Loading; Testing Application Standard; 1994.

BB. FEMA P-320 - Taking Shelter from the Storm: Building or Installing a Safe Room for Your Home; 2024.

CC. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2024.

DD. FLA (PAD) - Florida Building Code Online - Product Approval Directory; Current Edition.

EE. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; 2020.

FF. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

GG. IEEE 299 - IEEE Standard Method for Measuring the Effectiveness of Electromagnetic Shielding Enclosures; 2006 (Reaffirmed 2012).

HH. ITS (DIR) - Directory of Listed Products; Current Edition.

II. Miami (APD) - Approved Products Directory; Miami-Dade County; Current Edition.

JJ. NAAMM HMMA 805 - Recommended Selection and Usage Guide for Hollow Metal Doors and Frames; 2012.

KK. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

LL. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2024.

MM. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.

NN. NAAMM HMMA 850 - Fire-Rated Hollow Metal Doors and Frames; 2014.

OO. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames; 2018.

PP. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

QQ. NAAMM HMMA 862 - Guide Specifications for Forced Entry/Bullet Resistant (FE/BR) Security Hollow Metal Doors and Frames; 2023.

RR. NAAMM HMMA 863 - Guide Specifications for Detention Security Hollow Metal Doors and Frames; 2024.

SS. NAAMM HMMA 865 - Guide Specifications for Sound Control Hollow Metal Door and Frame Assemblies; 2013.

TT. NAAMM HMMA 866 - Guide Specifications for Stainless Steel Hollow Metal Doors and Frames; 2012 (Reapproved 2018).

UU. NAAMM HMMA 867 - Guide Specifications for Laminated Core Hollow Metal Doors and Frames; 2016.

VV. NCSC (TS) - Technical Specifications for Construction and Management of Sensitive Compartmented Information Facilities; 2021.

WW. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.

XX. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2025.

YY. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

ZZ. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.

AAA. UFC 4-010-01 - DoD Minimum Antiterrorism Standards for Buildings; 2018, with Editorial Revision (2024).

BBB. UL (DIR) - Online Certifications Directory; Current Edition.

CCC. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

DDD. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

EEE. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

FFF. UL 1784 - Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives; Current Edition, Including All Revisions.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, accurately representing construction, color, finish and surface texture.

E. Design Submittals: Manufacturer to submit anchor design analysis calculations for blast-resistant doors signed and sealed by specialty design engineer experienced in this type of work and licensed in the State in which the Project is located.

F. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

G. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

H. Manufacturer's Qualification Statement.

I. Installer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products Specified in this Section, with not less than (15) Fifteen years documented xperience.

B. Manufacturer Qualifications: Provide hollow metal doors and frames from SDI Certified Manufacturer.

C. Installer Qualifications: Company specializing in performing Work of type Specified, with not lesss thank (10) Ten Years documented experience.

D. Maintain at Existing Project Site, copies of reference standards relating to installation of those Products specified.

1.07 DELIVERY, STORAGE, HANDLING

A. Fully comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in full accordance with all specified requirements.

B. Protect with resilient packaging; avoid humidity build up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

1.08 PROJECT CONDITIONS

A. Field Measurements: **Confirm all**dimensions, each opening via Existing Project Site field measurements, prior to commencement of any fabrication, this Section..

1.09 COORDINATION

A. Coordinate installation of all anchorages for hollow metal frames. Furnish setting drawings, templates and directions for all installing anchorages, including sleeves, concrete inserts, anchor bolts and items with integral anchors. Deliver such items to project site in time for scheduled installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
   1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.
   2. Curries, an Assa Abloy Group company: www.assaabloydss.com.
   3. Mesker, dormakaba Group; FDJ Series Drywall Frames: www.meskeropeningsgroup.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Hurricane-Resistant and Tornado-Resistant Hollow Metal Doors and Frames:
   1. Premier Steel Doors and Frames; Severe Windstorm Rated Doors & Frames: www.trustpremier.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Blast Resistant Hollow Metal Doors and Frames:
   1. AMBICO Limited: www.ambico.com.

2. Krieger Specialty Products; Blast and Pressure Resistant Doors: www.kriegerproducts.com.
3. Substitution: Reference Section01 60 00 - Product Requirementst for additional Content.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
   1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
   2. Accessibility: Comply with ICC A117.1 and ADA Standards.
   3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
   4. Door Edge Profile: Manufacturers standard for application indicated.
   5. Typical Door Face Sheets: Flush.
   6. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
   7. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
   8. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
      a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.
      b. Based on NAAMM HMMA Custom Guidelines: Provide at least A25/ZF75 (galvannealed) for interior applications, and at least A60/ZF180 (galvannealed) or G60/Z180 (galvanized) for corrosive locations.

B. Hollow Metal Panels: Same construction, performance, and finish as doors.

C. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Door Finish: Factory primed and field finished.

B. Exterior Doors: Thermally insulated.
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 3 - Extra Heavy-duty.
      b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
      e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
      f. Thermal properties to rate at a fully operable minimum U-Factor 0.374 and R-Value 2.53, including insulated door, Mercury thermal break frame and threshold.
      g. Top and Bottom Edges: Reinforce top and bottom of each door with continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel shall include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers will not be acceptable.
      h. Hinge Reinforcement: Minimum 7 gauge (3/16"), plate 1-1/4" x 9".

i. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6, Current Edition, with reinforcing plates from same material as door face sheets.

2. Based on NAAMM HMMA Custom Guidelines:
   a. Fully comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
   b. Performance Level 3 - Heavy Duty, in accordance with NAAMM HMMA 805.
   c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
   d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
   e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   a. Foam Plastic Insulation: Manufacturer's standard board insulation with maximum flame spread index (FSI) of 75, and maximum smoke developed index (SDI) of 450 in accordance with ASTM E84, and completely enclosed within interior of door.
4. Door Thermal Resistance: R-Value of as indicated on drawings.
5. Door Thickness: 1-3/4 inches, nominal.
6. Top Closures: Flush with top of faces and edges.
7. Door Face Sheets: Flush.
8. Weatherstripping: Reference Contract Documents for additional Content.
9. Door Finish: As selected by Architect from Manufacturer's full range of options.

C. Interior Doors, Non Fire Rated:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 2 - Heavy-duty.
   b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Based on NAAMM HMMA Custom Guidelines:
   a. Fully comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
   b. Performance Level 1 - Light Duty, in full accordance with NAAMM HMMA 805.
   c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
   d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
4. Door Thickness: 1-3/4 inches, nominal.
5. Door Face Sheets: Flush.
6. Door Finish: Factory primed and field finished.
7. Top and Bottom Edges: Reinforce tops and bottoms of each door with continuous steel channel not less than16 gauge, extending the full width of the door and welded to the face sheet.
8. Hinge Reinforcement: Minimum 7 gauge (3/16"), plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
9. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6, Current Edition, with reinforcing plates from same material as door face sheets.

D. Fire Rated Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 2 - Heavy-duty.
   b. Physical Performance Level B, 500,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.

e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.

2. Based on NAAMM HMMA Custom Guidelines: Comply with NAAMM HMMA 850 requirements for fire-rated doors.
   a. Fully comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
   b. Performance Level 1 - Light Duty, in full accordance with NAAMM HMMA 805.
   c. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
   d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Fire Rating: As indicated on drawings, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
4. Temperature Rise Rating (TRR) Across Door Thickness: In full accordance with all local codes and those Local Authorities having Jurisdiction..
5. Provide units listed and labeled by UL (DIR) or ITS (DIR).
   a. Attach fire rating label to each fire rated unit.
6. Smoke and Draft Control Doors (Indicated with letter "S" on Drawings and/or Door Schedule): Self closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following;
   a. Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
   b. Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
   c. Label: Include the "S" label on fire-rating label of door.
7. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
8. Door Thickness: 1-3/4 inches, nominal.
9. Door Face Sheets: Flush.
10. Door Finish: Factory primed and field finished.

E. Sound Control Door Assemblies: Refer to Section 08 34 73.

F. Sound Rated Interior Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 1 - Standard-duty.
   b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Based on NAAMM HMMA Custom Guidelines:
   a. Comply with guidelines of NAAMM HMMA 865 for Sound Control Hollow Metal Doors and Frames.
   b. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
   c. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
   d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
   e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Sound Transmission Class (STC) Rating of Door and Frame Assembly: STC of 39, minimum, calculated in full accordance with ASTM E413, and tested in full accordance with ASTM E90.
4. Outdoor Indoor Transmission Class (OITC) Rating of Door and Frame Assembly: OITC of 35, minimum, calculated in accordance with ASTM E1332, and tested in full accordance with ASTM E90.
5. Sound Transmission Loss (TL) of Door and Frame Assembly: TL of 40 dB at 500 to 1250 Hz, minimum, in full accordance with ASTM E90 testing.

6. Door Core Material: Manufacturer's construction as required to fully meet those acoustic requirements delineated within Contract Documents,
7. Door Thickness: As required to meet acoustic requirements indicated.
8. Door Face Sheets: Flush.
9. Door Finish: Factory primed and field finished.
10. Sound Seals: Integral, in door and/or frame.
11. Opening Force of Sound Rated Doors, Non Fire Rated: 5 pounds, maximum, in full compliance with ADA Standards.

G. Doors; Interior and Exterior Interior and Exterior:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 1 - Standard-duty.
   b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Based on NAAMM HMMA Custom Guidelines:
   a. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
   b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Door Face Metal Thickness: 14 gauge, 0.067 inch, minimum.
   d. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
3. Commercial Security Rating Impact Testing: Comply with forced entry, static load, and soft or hard body impact testing for Class 1 in accordance with NAAMM HMMA 862 requirements.
4. Detention Security Facility Swinging Door Assemblies: Comply with Grade 1 security characteristics, in accordance with NAAMM HMMA 863 and ASTM F1450 requirements.
5. Bullet Resistance: UL 752, Threat Level Rating - Level 1.
6. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
   a. Foam Plastic Insulation: Manufacturer's standard board insulation with maximum flame spread index (FSI) of 75, and maximum smoke developed index (SDI) of 450 in accordance with ASTM E84, and completely enclosed within interior of door.
7. Door Thickness: As required to meet requirements indicated.
8. Door Face Sheets: Flush.
9. Door Finish: Factory primed and field finished.
10. Stainless Steel, Type 304, for Severely Corrosive Conditions: No. 4 - General purpose polished finish, complying with ASTM A666/A666M and NAAMM HMMA 866 requirements.
11. Hinge Rail and Reinforcement: Non-beveled edge, reinforced with continuous steel channel, 12 gauge, 0.093 inch minimum metal thickness, welded at 5 inch on center maximum, and compatible with 4-1/2 inch full mortise template and continuous geared hinges.

H. Blast Resistant Exterior Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 1 - Standard-duty.
   b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
2. Based on NAAMM HMMA Custom Guidelines:
   a. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.

b. Physical Performance Level C, 250,000 cycles; in full accordance with ANSI/SDI A250.4.
c. Door Face Metal Thickness: 14 gauge, 0.067 inch, minimum.
d. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.

3. Blast Resistance (Static Loading): Provide doors capable of withstanding explosive pressure, in compliance with ASTM F2247, having damage level of Category IV, using Procedure A.
4. Blast Resistance (Dynamic Loading): Provide doors capable of withstanding explosive pressure, in compliance with ASTM F2927, having response damage of Category V.
5. Blast Resistance: Complies with U.S. Department of Defense (DoD) UFC 4-010-01 standards with "High" levels of protection.
6. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements..
   a. Foam Plastic Insulation: Manufacturer's standard board insulation with maximum flame spread index (FSI) of 75, and maximum smoke developed index (SDI) of 450 in full accordance with ASTM E84, and completely enclosed within interior of door.
7. Door Thickness: As required to meet requirements indicated.
8. Door Face Sheets: Flush.
9. Door Finish: Factory primed and field finished.
10. Stainless-Steel, Type 304, for Severely Corrosive Conditions: No. 4 - General purpose polished finish, fully complying with ASTM A666/A666M and NAAMM HMMA 866 requirements.
11. Hinge Rail and Reinforcement: Non-beveled edge, reinforced with continuous steel channel, 12 gauge, 0.093 inch minimum metal thickness, welded at 5 inch on center maximum, and compatible with 4-1/2 inch full mortise template and continuous geared hinges.

I. Hurricane Resistant Doors:
1. Comply with Florida Building Code (FBC) test protocols for High Velocity Hurricane Zone (HVHZ) FBC TAS 201, FBC TAS 202 and FBC TAS 203.
2. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
   a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
   b. Wind-Borne Debris Resistance: Door and frame components shall have FLA (PAD) approval or Miami (APD) approval for Large and Small Missile impact and pressure cycling at design wind loads.
3. Hurricane Shelter Application: Comply with ICC 500 standard.
   a. Residential: Designed and tested to comply with FEMA P-320 residential shelter door assembly guidelines.
   b. Commercial: Designed and tested to comply with FEMA P-361 community shelter door assembly guidelines.
4. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
   a. Level 3 - Extra Heavy-duty.
   b. Physical Performance Level A, 1,000,000 cycles; in full accordance with ANSI/SDI A250.4.
   c. Model 1 - Full Flush.
   d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
   e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
5. Based on NAAMM HMMA Custom Guidelines:
   a. Fully comply with guidelines of NAAMM HMMA 860 for Hollow Metal Doors and Frames.
   b. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
   c. Physical Performance Level C, 250,000 cycles; in fullaccordance with ANSI/SDI A250.4.
   d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.

e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.

6. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
7. Door Thickness: 1-3/4 inches, nominal.
8. Door Face Sheets: Flush.
9. Door Finish: Factory primed and field finished.
10. Stainless Steel, with Type 304 Alloy for Moderately Corrosive Conditions: Same as stainless-steel door finish, complying with ASTM A666/A666M and NAAMM HMMA 866 requirements.

J. Tornado Resistant Doors:
1. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
b. Wind-Borne Debris Resistance: Door and frame components shall have FLA (PAD) approval, Miami (APD) approval, or UL (DIR) approval for Large and Small Missile impact and pressure cycling at design wind loads.
2. Tornado Shelter Application: Comply with ICC 500 standard.
a. Residential: Designed and tested to comply with FEMA P-320 residential shelter door assembly guidelines.
b. Commercial: Designed and tested to comply with FEMA P-361 community shelter door assembly guidelines.
3. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
a. Level 3 - Extra Heavy-duty.
b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
c. Model 1 - Full Flush.
d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
e. Zinc Coating: A60/ZF180 galvannealed coating; ASTM A653/A653M.
4. Based on NAAMM HMMA Custom Guidelines:
a. Fully omply with guidelines of NAAMM HMMA 866 for Stainless-Steel Hollow Metal Doors and Frames.
b. Performance Level 2 - Moderate Duty, in full accordance with NAAMM HMMA 805.
c. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
e. Zinc Coating: G90/Z275 galvanized coating; ASTM A653/A653M.
5. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
6. Door Thickness: 1-3/4 inches, nominal.
7. Door Face Sheets: Flush.
8. Door Finish: Factory primed and field finished.
9. Stainless Steel, with Type 304 Alloy for Moderately Corrosive Conditions: No.4 - Brushed satin finish, fully complying with ASTM A666/A666M and NAAMM HMMA 866 requirements.

2.04 HOLLOW METAL FRAMES

A. Fully comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Factory primed and field finished.

C. Exterior Door Frames: Knock Down Type.
1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
2. Frame Metal Thickness: 14 gauge, 0.067 inch, minimum.

3. Frame Finish: Factory primed and field finished.
4. Weatherstripping: Separate, see Section 08 71 00.

D. Interior Door Frames, Non Fire Rated: Full profile/continuously welded type.
1. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
2. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
3. Frame Finish: Factory primed and field finished.

E. Door Frames, Fire Rated:
1. Fire Rating: Same as door, labeled.
2. Terminated Stops: Provide at interior doors; closed end stop terminated 6 inch, maximum, above floor at 45 degree angle.
3. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
4. Frame Finish: Factory primed and field finished.

F. Sound Rated Door Frames:
1. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
2. Frame Finish: Factory primed and field finished.

G. Bullet Resistant Door Frames: Comply with UL 752, with same level of bullet resistance as door; face welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Frame Finish: Factory primed and field finished.

H. Commercial and/or Detention Security Resistant Door Frames: With same security resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Frame Finish: Factory primed and field finished.

I. Blast Resistant Door Frames: With same blast resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Frame Finish: Factory primed and field finished.

J. Hurricane Resistant Door Frames: With same hurricane resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Stainless-Steel Finish: Same as stainless-steel door finish.
3. Frame Finish: Factory primed and field finished.

K. Tornado Resistant Door Frames: With same tornado resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Stainless-Steel Finish: Same as stainless-steel door finish.

L. Frames for Wood Doors: Fully comply with frame requirements in accordance with corresponding door.

M. Mullions for Pairs of Doors: Fixed, with profile similar to jambs.

N. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

O. Transom Bars: Fixed, of profile same as jamb and head.

P. Provide mortar guard boxes for hardware cut outs in frames to be installed in masonry or to be grouted.

Q. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.

R. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

2.05 FINISHES

A. Primer: Rust inhibiting, complying with ANSI/SDI A250.10, door Manufacturer's standard.

B. Factory Finish: Complying with ANSI/SDI A250.3, manufacturer's standard coating.
   1. Color: As selected by Architect from Manufacturer's full range of options.

C. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
   1. Fire Rated Frames:

2.06 ACCESSORIES

A. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: As delineated within Contract Documents.
   2. Frame Material: 18 gauge, 0.0478 inch, galvanized steel.
   3. Metal Finish: Beige polyester powder coating.
   4. Glazing: 1/4 inch thick, tempered glass, in full mpliance with those requirements of Authorities having Jjurisdiction.
   5. Manufacturers:
      a. All Metal Stamping: www.allmetalstamping.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content

B. Glazing: As specified in Section 08 80 00, factory installed.

C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

D. Astragals and Edges for Double Doors: Pairs of door astragals, and door edge sealing and protection devices.
   1. UL listed products in compliance with requirements of authorities having jurisdiction.
   2. Provide surface mounted astragal to cover or fill space for full door height between pair of doors or door and adjacent jamb.
   3. Astragal Type: Split, two parts, and with automatic locking, cutouts for other door hardware, and sealing gasket.
   4. Edge Type: Beveled edge
   5. Material: Aluminum.
   6. Metal Finish: Beige powder coating.
   7. Provide non-corroding fasteners at exterior locations.
   8. Manufacturers:
      a. All Metal Stamping: www.allmetalstamping.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Astragals for Double Doors: Specified in Section 08 71 00.
   1. Exterior Doors: Steel, Z-shaped.
   2. Fire Rated Doors: Steel, shape as required for fire rating.

F. Mechanical Fasteners for Concealed Metal to Metal Connections: Self drilling, self tapping, steel with electroplated zinc finish.
   1. Manufacturers:
      a. ITW Commercial Construction North America; ITW CCNA Buildex Teks Select Series: www.ITWBuildex.com.

b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

G. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

H. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

I. Temporary Frame Spreaders: Provide (1) One per each door frame.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. **Verify all** existing conditions, prior to commencing any Work, this Section.

B. **Confirm all** opening sizes, tolerances are correct, prior to begining any Work, this Section.

C. **Verify all** finished walls are in plane, as required to ensure proper door alignment, all Work this Section.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

3.02 PREPARATION

A. Thoroughly coat inside, all frames, scheduled to be installed within masonry, grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install all doors, frames in full accordance with Manufacturer's written instructions, all related requirements of specified door and frame standards or custom guidelines indicated.

B. Install prefinished frames, only after painting and wall finishes are complete.

C. Install fire rated units in full accordance with NFPA 80.

D. Coordinate all frame anchor placement with wall construction.

E. Grout all frames within masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform same.

F. Install all hardware, as delineated within Contract Documents.
   1. Fully comply with all recommended practice, hardware placement, doors and frames, while in full accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

G. Fully comply with all glazing installation requirements per Section 08 80 00 - Glazing.

H. Coordinate installation of all electrical connections to electrical hardware items.

3.04 TOLERANCES

A. Clearances Between Doors, Frames: Fully comply, all necessary requirements, including specified frame standards, custom guidelines and in full accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. **Adjust all** Work, this Section, as required to ensure smooth, balanced door operation, all openings.

END OF SECTION

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SECTION 08 11 16
ALUMINUM DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum Doors and Frames.

1.02 RELATED REQUIREMENTS

A. Section 07 25 00 - Weather Barriers.

B. Section 08 92 00 - Joint Sealants.

C. Section 08 14 16 - Flush wood Doors.

D. Section 08 12 13 - Hollow Metal Frames.

E. Section 08 71 00 - Door Hardware.

F. Section 08 80 00 - Glazing.

G. Section 09 91 13 - ExteriorPainting.

H. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products; 2021.

B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum; 2025.

C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

D. AAMA 701/702 - Performance Specification for Pile Weatherstrips (AAMA 701) and Polymer Weatherseals (AAMA 702); 2023.

E. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.

F. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

G. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

H. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022, with Errata (2023).

B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

G. ASTM C365/C365M - Standard Test Method for Flatwise Compressive Properties of Sandwich Cores; 2022.

H. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2024.

I. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2024.

J. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 2022.

K. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2022.

L. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2017.

M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

N. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

O. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

P. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

Q. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).

R. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).

S. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes; 2023.

T. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2023.

U. FLA (FBC-B) - Florida Building Code: Building (8th Edition); 2023, with Supplement (2024).

V. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

W. ITS (DIR) - Directory of Listed Products; Current Edition.

X. Miami (APD) - Approved Products Directory; Miami-Dade County; Current Edition.

Y. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

Z. UL (DIR) - Online Certifications Directory; Current Edition.

AA. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's thoroughly detailed, descriptive literature, each type Product, particular to this Project, including all fabrication methods.

C. Shop Drawings: Thoroughly detailed Shop Drawing submittal, incuding elevation, each opening, this Particular Project.
   1. Verify all dimensions via field measurements, before commencing any fabrication and coordinate said date witihin submittal.

D. Product Samples: Provided (2) Two Product Samples, Manufacture's standard size, as required to accurately illustrate construction, hardware, glazing, color and finish.

E. Test Report: Certified Test Reports from qualified independent testing agency confirming all Work, this Section fully complies with Contract Documents, specified performance requirements.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Field Quality Control Submittals: Thoroughly detailed Report, field testing for water penetration and air leakage, this particular Project.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products specified within this Section, minimum (15) Fifteen Years documented experience.

B. Installer Qualifications: Company specializing in performing Work specified within this Section, minimum (10) Ten Years documented experience.

1.06 DELIVERY, STORAGE, HANDLING

A. Deliver all Products within Manufacturer's protective packaging, palleted, crated and banded together.

B. Thoroughly inspect all delivered Products for any Damage, **replace all Damaged Work, this Section. Repaired Products, Work will not be accepted, permitted.**

C. Store all components within clean, dry, indoor area, under cover, within Manufacturer's Packaging until installation.

D. Protect all materials from any Damage during handling, installation.

1.07 FIELD CONDITIONS

A. Do not start any installation, Work, this Section until space has been enclosed, all ambient thermal conditions are being maintained at levels consistent with final project requirements.

1.08 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. **Replace any, all defective Work, immediately.**

C. Manufacturer Warranty: Provide Manufacturer's (20) Twenty Year Warranty for any defects within materials or workmanship. Complete all forms wihin Owner's Name and register with Manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flush Aluminum Doors with Aluminum Face Sheets:
   1. Cline Aluminum Doors, Inc.: www.clinedoors.com.
   2. Special-Lite, Inc. ; www.special-lite.com.
   3. Substitutions: Reference Section 0160 00 - Product Requirements for additional Content.

B. Glazed Aluminum Doors:
   1. Andersen: www.andersenwindows.com.
   2. Reynaers Aluminum: www.reynaers.com.
   3. Wilson Partitions: www.wilsonpart.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Aluminum Frames:
   1. Arcadia, Inc.: www.arcadiainc.com.
   2. Avalon International Aluminum LLC.: www.avalonint.com.
   3. Cline Aluminum Doors, Inc.: www.clinedoors.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 DOORS AND FRAMES

A. Accessibility: Fully comply with ICC A117.1 and ADA Standards.

B. Glazed Aluminum Doors: Extruded aluminum tube frame, full glazed, with middle rail; factory glazed.
   1. Thickness: 1-3/4 inches, nominal.
   2. Thickness: Manufacturer's standard for door size and construction.
   3. Stile Width: as delineated within Contract Documents.
   4. Finish: as selected by Architect from Manufacturer's full range of options.
   5. Texture: as selected by Architect from Manufacturer's full range of options.
   6. Seals: Manufacturer's standard.

C. Aluminum Frames for Doors, Sidelights, or Transoms: Extruded aluminum, non-thermally broken hollow or C-shaped sections;
   1. Frame Depth: as indicated within Contract Documents.
   2. Finish: as selected by Architect from Manufacturer's full range of options.
   3. Weatherstripping: Replaceable pile type; at jambs and head.
   4. Sidelight/Transom Glazing: Sealed insulating glass units, 1 inch overall thickness, with two panes of clear 1/4 inch thick fully tempered glass.
   5. Sidelight/Transom Glazing: Clear, single pane of 1/4 inch thick fully tempered glass.

D. Aluminum Frames for Doors, Sidelights, or Transoms: Extruded aluminum nonthermally broken sections for double-glazing;
   1. System Acoustical Performance: Sound Transmission Class (STC) of 53, minimum, when tested in full accordance with ASTM E90.
   2. Frame Depth: as delineated within Contract Documents.
   3. Frame Sightline: as delineated within Contract Documents.
   4. Finish: as selected by Architect from Manufacturr's full range of options..
   5. Weatherstripping: Replaceable pile type; at jambs and head.

E. Aluminum Frames for Doors, Sidelights, or Transoms: Extruded aluminum nonthermally broken sections for double-glazing; no steel components.
   1. System Acoustical Performance: Sound Transmission Class (STC) of 53, minimum, when tested in accordance with ASTM E90.
   2. Frame Depth: as delineated within Contract Documents.
   3. Frame Sightline: 1-1/2 inches.
   4. Finish: as selected by Architect form Manufacturer's full range of options.
   5. Weatherstripping: Replaceable pile type; at jambs and head.

F. Dimensions and Shapes: as delineated within Contract Documents.

2.03 COMPONENTS

A. Flush Door Panels: Without visible seams on face sheet.
   1. Framing and Hardware Backup: Extruded aluminum tubing, 1/8 inch minimum thickness.
   2. Perimeter Edges: Extruded aluminum cap.
   3. Insulating Panel Thickness: 1 inch overall thickness.
   4. Exterior Doors Thermal Transmittance: U-value of 0.50, nominal, when tested in accordance with ASTM C1363.
   5. Core: Poured-in-place polyurethane foam insulating material of not less than 5 lb/cu ft density.
   6. Core: Rigid insulating material of not less than 2.0 lb/cu ft density.
   7. Core: Rigid honeycomb core of marine grade organic material coated with phenolic resin, minimum compression strength of 94.8 psi, when tested in accordance with ASTM C365/C365M.
   8. Laminating Adhesive: Manufacturer's standard low-VOC materials.

B. Tubular Doors: Extruded aluminum tubing, 1/8 inch minimum thickness, with heavy-duty plated steel through bolts in rails, glazing stops, and glazing gaskets.

C. Frames: Extruded aluminum shapes, not less than 0.062 inch thick, reinforced at hinge and strike locations.
   1. Corner Brackets: Extruded aluminum, fastened with stainless steel screws.
   2. Trim: Extruded aluminum, not less than 0.062 inch thick, removable snap-in type without exposed fasteners.

D. Flush Infill Panels for Sidelights/Transoms: Panel face sheet finish and thickness same as doors without any visible seams.
   1. Insulating Panel Thickness: 1 inch overall thickness.
   2. Core: Rigid insulating material of not less than 2.0 lb/cu ft density.

E. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: 12 inch wide by 12 inch high.
   2. Frame Material: 18 gauge, 0.0478 inch, galvanized steel.

2.04 PERFORMANCE REQUIREMENTS

A. Provide only those door assemblies that have been designed, fabricated within full compliance with specified performance requirements, Contract Documents.

B. Wind Borne-Debris Resistance: Identical full size glazed assembly without auxiliary protection, tested by independent agency in accordance with ASTM E1996 and Wind Zone 4 - Additional Protection for Large and Small Missile impact and pressure cycling at design wind pressure.

C. Water Leakage: No uncontrolled leakage when tested in full accordance with ASTM E331 at differential pressure of 7.5 psf.

D. Condensation Resistance Factor: 50, measured in full accordance with AAMA 1503.

E. Acoustical Performance: Sound Transmission Class (STC) of 25, minimum, when tested in full accordance with ASTM E90.

2.05 MATERIALS

A. Aluminum Sheet: ASTM B209/B209M, alloy 5005, temper H14, stretcher leveled.

B. Extruded Aluminum: ASTM B221 (ASTM B221M), alloy 6063, temper T5, or alloy 6463, temper T5.

2.06 FINISHES

A. Class I Natural Anodized Finish: Clear anodic coating; AAMA 611 AA-M12C22A41, minimum dry film thickness (DFT) of 0.7 mils, 0.0007 inch.

B. Class II Natural Anodized Finish: Clear anodic coating; AAMA 611 AA-M12C22A31, minimum dry film thickness (DFT) of 0.4 mil, 0.0004 inch.

C. Class I Color Anodized Finish: Electrolytically deposited colored anodic coating; AAMA 611 AA-M12C22A44, minimum dry film thickness (DFT) of 0.7 mils, 0.0007 inch.

D. Class II Color Anodized Finish: Electrolytically deposited colored anodic coating; AAMA 611 AA-M12C22A34, minimum dry film thickness (DFT) of 0.4 mil, 0.0004 inch.

2.07 ACCESSORIES

A. Fasteners: Aluminum, non magnetic stainless steel, other material, as Warranted by Manufacturer as non corrosive, fully compatible with all aluminum components.

B. Brackets, Reinforcements: Manufacturer's high strength aluminum units.

C. Bituminous Coating: Cold applied asphaltic mastic, compounded for 30-mil thickness per coat.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all wall surfaces, openings are ready to receive Work, this Section within tolerances specified via Manufacturer's written instructions.

B. Confirm all frames installed for all Work, this Section are in strict, full accordance with Manufacturer's recommendations, approved shop drawings and those tolerances delineated within Contract Documenst and Manufacturer's written instructions.

3.02 PREPARATION

A. Perform all cutting, fitting, forming, drilling, and grinding of frames as required for these particulare Project conditions.

B. Replace all Damaged components, immediately.

C. Separate all dissimilar metals, as required to prevent any electrolytic action.

3.03 INSTALLATION

A. Install all doors, frames in full accordance with Manufacturer's written instructions, previously approved Shop Drawings Submittal, particular to this Project.

B. Install all exterior doors, frames in full accordance with ASTM E2112.

C. Set all frames plumb, square, level, and fully aligned, as required to receive doors. Anchor all frames to adjacent construction in strict accordance with Manufacturer's recommendations.

D. Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by painting dissimilar metal with heavy coating of bituminous paint.

E. Hang all doors, adjust hardware, as required to achieve specified clearances, proper door operation.

F. Install door hardware. Reference Section 08 71 00 for additional Content.

G. Install glazing; set all glazing stops, glazing gaskets flush with face of door or frame.

H. Fully comply with all glazing installation requirements. Reference Section 08 80 00 for additional Content.

3.04 FIELD QUALITY CONTROL

A. Provide services of aluminum door Manufacturer's field representative, as required to observe proper installation of Work, this Section and submit formal Report.

B. Reference Section 01 40 00 - Quality Requirements for additional Content. Sectio

C. Provide field testing, all Work, this Section, via ins independent laboratory in accordance with AAMA 502 and AAMA/WDMA/CSA 101/I.S.2/A440 during construction process and before installation of interior finishes.
   1. Perform tests upon (6) six individual openings,as directed by Architect.
   2. Conduct tests on individual doors prior to 5 percent, 50 percent, and 90 percent completion of Work, this Sectio
   3. Field test for water penetration in full accordance with ASTM E1105 using Procedure B - cyclic static air pressure difference; test pressure shall not be less than 1.9 psf.
   4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 6.27 psf.
      a. Maximum allowable rate of air leakage is 0.10 cfm/sq ft.

D. Replace all fenestration components that have failed designated field testing,immediately and retest to, as required to confirm performance fully complies with specified requirements, Contract Documents.

3.05 CLEANING

A. Upon completion of installation, thoroughly clean all door, frame surfaces in full accordance with AAMA 609 & 610.

B. **Do not** use abrasive, caustic, or acid cleaning agents.

C. Thoroughly clean all Work, this Section.

3.06 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush configuration; non rated.

1.02 RELATED REQUIREMENTS

A. Section 08 11 13 - Hollow Metal Doors and Frames.

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY "...

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Indicate door core materials, construction; veneer species, type and characteristics.

C. Shop Drawings: Show all doors, frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and all other details, particular to this Project.

D. Samples: Submit Product Samples, Manufacturer's standard size, as required to accurately represent construction, color, wood grain, sheen and finish.

E. Manufacturer's Installation Instructions: Indicate written instructions, particular to this Project.

F. Detailed Warranty, executed within Owner's Name.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products specified within this Section, with not less than (15) Fifteen years documented experience.

1.06 DELIVERY, STORAGE, HANDLING

A. Package, deliver and store all doors in full accordance with Manufacturer's written requirements and Contract Documents.

B. Accept doors upon Existing Project Site, only within Manufacturer's packaging, and thoroughly inspect for any damage.

C. Protect all doors with resilient packaging sealed with heat shrunk plastic; **do not** store within damp or wet areas, or any areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than (1) one Calendar week, and break seal, as required to permit proper ventilation.

1.07 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Manufacturer Warranty: Provide Manufacturer's detailed Warranty on all interior doors for, life of installation. Complete all forms within Owner's name and register same with Manufacturer.

1. Include coverage for any delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:

1. As outlined within Contract Documents.
2. Substitutions: Reference Section 01 60 00 - Product Requirements for additioal Content.

2.02 DOORS AND PANELS

A. Doors: Reference Contract Documents for additional Content.
   1. Quality Standard: Custom Grade, Heavy Duty performance, in full accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
   2. Wood Veneer Faced Doors: (5) Five ply.

B. Interior Doors: 1-3/4 inches thick, flush construction.
   1. Provide only solid core doors.
   2. Fire Rated Doors: Fully tested to those ratings indicated on drawings in full accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
   3. Wood veneer facing with factory transparent finish as indicated on drawings.

2.03 DOOR AND PANEL CORES

A. Non Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated. within Contract Documents

B. Fire Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated; with core blocking as required to provide adequate anchorage of hardware without through bolting.

2.04 DOOR FACINGS

A. Veneer Facing for Transparent Finish: Species as indicated on the drawings, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
   1. Vertical Edges: Same species as face veneer.
   2. "Pair Match" each pair of doors; "Set Match" pairs of doors within (6) six feet of each other when doors are closed.

2.05 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.
   2. Provide solid blocking for other throughbolted hardware.

C. Factory machine doors for hardware other than surface mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

E. Provide edge clearances in accordance with the quality standard specified.

2.06 FINISHES, WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:

B. Factory finish all doors in full accordance with previously approved Product Sample.

C. Seal door top edge with colored sealer, as required to match door facing.

2.07 ACCESSORIES

A. Reference Section 08 11 13 - Hollow Metal Frames and Doors for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all existing conditions, prior to starting any Work, this Section.

B. Confirm all opening sizes, tolerances are correct.

C. **Do not** install any doors that are not plumb, level, or are outside Manufacturer's tolerances.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install all doors in full accordance with Manufacturer's written instructions, specified quality standards particular to this Project Site.

B. Factory Finished Doors: **Do not** field cut or trim, if fit or clearance is not correct, replace door.

C. Use only machine tools to cut, drill, door hardware.

D. Coordinate installation of all doors with installation of frames and hardware.

3.03 TOLERANCES

A. Fully comply with all specified quality standards, fit and clearance tolerances.

B. Fully comply with all specified quality standards, telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust all doors, as required for smooth and balanced operation.

B. Adjust all closers, as required for full closure, proper operation.

END OF SECTION

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SECTION 08 31 00
ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall and ceiling mounted access doors, panels.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide detailed Product data including sizes, types, finishes, hardware, scheduled locations, and details for all adjoining work.

C. Manufacturer's Installation Instructions: Written installation instructions delineating all installation requirements, this particular Project.

PART 2 PRODUCTS

2.01 ACCESS DOORS, PANELS ASSEMBLIES

2.02 WALL, CEILING MOUNTED ACCESS DOORS, PANELS

A. Wall, Ceiling Mounted Access Doos, Panels: Factory fabricated doors, frames, including fully assembled units with welded corner joints, filled and ground flush; square, without rack or warp; coordinate all requirements with particular installation assembly being used, each unit.
   1. Material: Steel.
   2. Style: Exposed frame with door surface flush with frame surface.
   3. Door Style: Single thickness with rolled or turned in edges.
   4. Heavy Duty Frames: (16) Sixteen gauge, minimum thickness.
   5. Heavy Duty Single Steel Sheet Door Panels: (16) SIxteen gauge, minimum thickness.
   6. Insulation: Non combustible mineral wool or glass fiber.
   7. Steel Finish: Painted, Primed.
   8. Factory Primed and Finished: Powder coated finish, color as selected by Architect from Manufacturer's full range of options.
   9. Hardware:
      a. Hardware for Fire Rated Units: As required for correspondng listing and those Local Authorities having Jurisdiction.
      b. Hinges, Non Fire Rated Units: Concealed, constant force closure spring type.
      c. Latch, Lock: Tamperproof tool operated cam latch.
      d. Number of Locks, Latches Required: As recommended by Manufacturer for each particular unit, minimum (1) one per unit..
      e. Gasketing: Extruded neoprene, around perimeter of door, panel.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** rough openings are correctly sized and located.

B. Begin installation only after all substrates have been properly prepared, and if the responsibility of another installer, notify Architect of any unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. **Thoroughly clean** all surfaces, prior to beginning any Work, this Section.

B. Prepare all surfaces, as required to fully comply with Manufacturer's written instructions, this particular Project.

3.03 INSTALLATION, PROTECTION

A. **Install all units** in full accordance with Manufacturer's written instructions.

B. **Install all frames** plum, level and secure rigidly in place.

C. **Position all units,** as required to provide convenient access to concealed equipment.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Secton, immediately.**

END OF SECTION

SECTION 08 36 13
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sectional Doors.

B. Operating hardware, related supports.

1.02 RELATED REQUIREMENTS

A. Reference Section 07 92 00 - Joint Sealants.

B. Reference Section 08 71 00 - Door Hardware.

C. Reference Section 09 91 13 - Exterior Painting.

D. Reference Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

C. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

E. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2023.

F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

I. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

J. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2024, with Editorial Revision (2025).

K. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.

L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

M. DASMA 102 - American National Standard Specifications for Sectional Doors; 2018.

N. ITS (DIR) - Directory of Listed Products; Current Edition.

O. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

P. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).

Q. NEMA MG 00001 - Motors and Generators; 2024.

R. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

S. UL (DIR) - Online Certifications Directory; Current Edition.

T. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.

C. Product Data: Show component construction, anchorage method, and hardware.

D. Product Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accuratly represent constuction, color, sheen and finish.

E. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Operation Data: Include normal operation, troubleshooting, and adjusting.

I. Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.

J. Specimen warranty.

K. Warranty: Submit Manufacturer's Warranty while ensuring all forms have been completed in Owner's name and registered with Manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products delineated within Contract Documents, minimum (10) Ten Years documented experience.

B. Installer Qualifications: Company specializing in performing Work delineated within Contract Documents, minimum (15) Fifteen Years documented experience.

C. Comply with all applicable code requirements, including those of local Authorities Having Jurisdiction, relatinhg to motors and motor controls.

D. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL, Testing Firm acceptable to local Authorities Having Jurisdiction, Reference Drawin

1.06 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Correction Period: Replace all defective Work immediately.

C. Manufacturer Warranty: Provide (15) Fifteen Year Warranty, all Work, this Section.

PART 2 MAN

2.01 MANUFACTURERS

A. Sectional Doors:
   1. Basis of Design: Haas Door; Product CHT-2032-20.
      a. Include 1/2-inch thick insulted tempered glazing.
   2. Amarr: www.amarr.co.
   3. C.H.I. Overhead Door: www.chiohd.com.
   4. Clopay Building Products: www.clopaydoor.com.
   5. Overhead Door Corporation: www.overheaddoor.com.
   6. Wayne-Dalton, a Division of Overhead Door Corporation: www.wayne-dalton.com.
   7. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Flexible Impact-Resistant Door Sections:
   1. Amarr; SuperFlex Impact Sections: www.amarr.com.

2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PERFORMANCE REQUIREMENTS

A. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.

B. Air Leakage Rate: Less than 0.40 cfm/sq ft when tested in accordance with ASTM E283/E283M at test pressure difference of 1.57 psf.

C. Thermal Transmittance: U-factor of 0.31 Btu/hr sq ft degrees F, maximum, in accordance with DASMA 102.

2.03 STEEL DOORS

A. Doors: Flush steel, insulated; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
   1. Door Panels: Steel construction; outer steel sheet of 20 gauge, 0.0359 inch minimum thickness, flush profile; inner steel sheet of 20 gauge, 0.0359 inch minimum thickness, flat profile; core reinforcement sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; polyurethane insulation.
   2. Door Panels: Stile and rail construction, of steel sheet 0.058 inch minimum thickness, with welded joints; rabbeted weather joints at meeting rails.
   3. Door Nominal Thickness: 2 inches thick.
   4. Exterior Finish:
      a. Factory applied acrylic baked enamel finish, color as selected by Architect from Manufacturer's full range of options
   5. Interior Finish:
      a. Factory primed per Manufacturer's standards.
      b. Factory applied acrylic baked enamel finish, color as selected by Architect from Manufacturer's full range of options.
   6. Glazed Lites: Full panel width, number of rows as indicated on the drawings; set in place with resilient glazing channel.
      a. Glazing: Annealed float glass; insulated glass units; clear; 1/2 inch nominal overall thickness.
   7. Electric Operation: Electric control station, Reference Electrical Drawings and Contract Documents for additional Content.

2.04 COMPONENTS

A. Track: Rolled galvanized steel, 0.120 inch minimum thickness; 3 inch wide, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.
   1. High lift, hold 24-inches minimum from ceiling structure

B. Track: Galvanized steel angles, 0.094 inch minimum thickness; 2-5/16 x 4 inch size, continuous one piece per side; galvanized steel mounting brackets 1/4 inch thick.

C. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
   1. 3-inch rollers, including ten 5/16-inch steel ball bearings, full floating within hardened steel races.

D. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
   1. Manual Operation: Requiring maximum exertion of (15) Fifteen pounds, force to open.
   2. 100K cycle.

E. Sill Weatherstripping: One piece resilient rubber strip, one piece; fitted to bottom door panel, full length contact.

F. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

G. Head Weatherstripping: EPDM rubber seal, one piece full length.

H. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.

I. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

2.05 MATERIALS

A. Sheet Steel: Hot dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.

B. Float Glass: Provide float glass glazing.
   1. Heat Strengthened and Fully Tempered Types: ASTM C1048.

C. Insulation: Foamed-in-place polyurethane, bonded to facing.

D. Metal Primer Paint: Zinc molybdate type.

2.06 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
   1. Provide interlock switches on motor operated units.
   2. All wiring, including low voltage, shall be set within concuit and concealed within masonry.

B. Electric Operators:
   1. Basis of Design: Liftmaster J, Jackshaft Operator.
      a. Manually operable in case of power faliure.
   2. Mounting: Side mounted on cross head shaft.
   3. Motor Enclosure:
      a. Exterior Doors: NEMA MG 00001, Type 4; open drip proof.
   4. Motor Rating: 1 hp; continuous duty.
   5. Motor Voltage: Coordinate with electrical drawings.
   6. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
   7. Controller Enclosure: NEMA EN 10250, Type 1.
   8. Opening Speed: 12 inches per second.
   9. Brake: Adjustable friction clutch type, activated by motor controller.
   10. Manual override in case of power failure.
   11. See Section 26 05 83 for electrical connections.

C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.

D. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
   1. Disconnect Switch: Factory mount disconnect switch within control panel.
   2. (24) Twenty Four volt circuit.
   3. Recess mounted, at interior door jamb.
   4. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
      a. Primary Device: Provide Double set of photoelectric eye sensors located at bottom of door jamb, approximately (24) twenty four inches above finish floor, final location shall be field determined by Owner Representative, based on apparatus configuration .
   5. Radio Control Antenna Detector, Long Distance Antenna: Reference Electrical Drawings and Specifications for additional requirements. Provides enhanced range through radio communications and reduced interference, ensuring that door opens and closes reliably at all times.
      a. Hand Held Transmitter: Digital control, resettable two (2) per door operator.

b. Contact, as required to signal door shall be completely open.
c. Adjustable timer that closes door, as required to secure the station after a predetermined amount of time.

6. Red, Green Warning Lights, power off of operator, one per each exit door opening. (Liftmaster RGL24LY) final location shall be field determined by Owner Representative, based on apparatus configuration, this particular Project.

E. Safety Edge: Located at bottom of sectional door panel, full width; electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all wall openings are ready to receive Work and opening dimensions, tolerances are within specified limits.

B. Confirm all electric power is available and of correct characteristics.

3.02 PREPARATION

A. Prepare all openings, as required to permit correct installation of door unit, perimeter air and vapor barrier seals.

B. Apply primer to entirewood frame.

3.03 INSTALLATION

A. Install each door unit assembly in full accordance with Manufacturer's instructions.

B. Anchor each assembly to wall constructio, building framing without any distortion or stress.

C. Securely brace all door tracks suspended from structure. Secure all acks to structural members only.

D. Fit and align entirte door assembies, including hardware.

E. Coordinate installation of entire lectrical service. Complete all power and control wiring from disconnect to unit components.

F. Install perimeter trim.

3.04 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch.

B. Maximum Variation from Level: 1/16 inch.

C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

D. Maintain dimensional tolerances and alignment with adjacent work.

3.05 ADJUSTING

A. Adjust all door assembies, as required for smooth operation and full contact with all weatherstripping.

B. Have Manufacturer's Field Representative present, as required to confirm proper operation and identify any additional required adjustments to door assemblies for proper operation, this particular Project.

3.06 CLEANING

A. **Thoroughly clean all Work, this Section.**

B. **Remove all labels, markings, all Work, this Section.**

3.07 PROTECTION

A. **Protect all Work, this Section from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 08 43 13
ALUMINUM FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum Framed Storefronts.

1.02 RELATED REQUIREMENTS

A. Preparation, coordination of all adjacent Work scheduled to receive work of this Section.

B. Section 05 12 00 - Structural Steel Framing.

C. Section 05 50 00 - Metal Fabrications.

D. Section 07 25 00 - Weather Barriers.

E. Section 07 92 00 - Joint Sealants.

F. Section 08 71 00 - Door Hardware.

G. Section 08 80 00 - Glazing.

H. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITON, ONLY"

A. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.

B. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems.

C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

D. AAMA 611 - Specification for Anodized Architectural Aluminum.

E. AAMA 612 - Voluntary Specification, Performance Requirements, and Test Procedures for Combined Coatings of Anodic Oxide and Transparent Organic Coatings on Architectural Aluminum.

F. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

G. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

H. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

I. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.

B. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

D. ASTM A123/A123M - Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.

E. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate.

F. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

G. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

H. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

I. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

J. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.

K. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors.

L. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

M. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

N. FBC TAS 201 - Impact Test Procedures; Testing Application Standard.

O. FBC TAS 202 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure; Testing Application Standard.

P. FBC TAS 203 - Criteria for Testing Products Subject To Cyclic Wind Pressure Loading; Testing Application Standard.

Q. FLA (PAD) - Florida Building Code Online - Product Approval Directory.

R. Miami (APD) - Approved Products Directory; Miami-Dade County.

S. SSPC-Paint 20 – Zinc Rich Coating.

T. TDI (PED) - Product Evaluation Directory - Texas Department of Insurance.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

B. Preinstallation Meeting: Schedule, conduct a preinstallation meeting (14) Fourteen calendar days prior to commencing any Work, this Section, including mandatory attendance by all affected installers, Subcontractors.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for Additional Content.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
   1. Include design engineer's stamp or seal on shop drawings for attachments and anchors.

D. Samples: Submit (2) Two Product Samples, Manufacture's standard size, as required to accurately illustrate construction, color and finish.

E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

F. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.

G. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.

H. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

I. Designer's qualification statement.

J. Manufacturer's qualification statement.

K. Installer's qualification statement.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
   1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.
      a. Insulating Glass Certification Council (IGCC).
      b. Safety Glazing Certification Council (SGCC).

C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
   1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.
      a. North American Contractor Certification (NACC) for glazing contractors.
      b. Equivalent independent third-party ANSI accredited certification.

1.07 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional content.

B. Locate as directed by Architect.

C. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.08 DELIVERY, STORAGE, HANDLING

A. Handle products of this section in full accordance with AAMA CW-10.

B. Protect all finished aluminum surfaces with wrapping. Do not use any adhesive papers, sprayed coatings that might bond to aluminum, when exposed to direct sunlight or adverse weather conditions.

1.09 FIELD CONDITIONS

A. **Do not** install any sealants when ambient temperature is less than(45) Forty Five degrees Fahrenheit. Maintain this minimum temperature before, during and minimum (72) Seventy Two hours immediately following installation of Work, this Section

1.10 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Replace all defective Work within a (1) One Year period commencing upon previously established Project Substantial Completion Date.

C. Provide Manufacturer's (10) Ten Year Warranty against any failures of all Work, this Section.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum Framed Storefronts:
   1. Kawneer North America: www.kawneer.com.
   2. Oldcastle BuildingEnvelope: www.oldcastlebe.com.
   3. Basis of Design: YKK AP America, Inc; YES 600 TU (thermally broken storefront system and 35D (medium style door): www.ykkap.com/commercial.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 BASIS OF DESIGN, FRAMING, INSULATING GLAZING

A. Center-Set Style, Wind-Borne-Debris Resistance Tested:
   1. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.

B. Front-Set Style, Wind-Borne-Debris Resistance Tested:
   1. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.

C. Center-Set Style, Blast Mitigation Tested:

D. Center Set Style, Thermally-Broken:
   1. Basis of Design: Boyd Aluminum; Series B450, 2 by 4-1/2 inch Storefront Center Set Style, Thermally Broken: www.boydaluminum.com.

E. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
   1. For any Product not identified as "Basis of Design", submit detailed information as required via Contract Documents.

2.03 ALUMINUM FRAMED STOREFRONT

A. Aluminum Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Unitized, shop assembly.
   2. Glazing Rabbet: For 1 inch insulating glazing.
   3. Glazing Rabbet: For 1/4 inch monolithic glazing.
   4. Glazing Position: Centered (front to back).
   5. Finish: Class I color anodized.
      a. Factory finish all surfaces that will be exposed in completed assemblies.
      b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
      c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
   6. Finish Color: As selected by Architect from Manufacturer's full range of options.
   7. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   8. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
   9. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   10. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
   11. Movement: Allow for minimal movement between storefront, all adjacent construction, without any damage to any components, Work this Section or Contract Documents.

12. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
13. Maintain continuous air barrier and/or vapor retarder seal throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel, and heel bead of glazing compound.
14. Preparation for Window Treatments: Provide reinforced interior horizontal head rail.

B. Performance Requirements
1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
   a. Design Wind Loads: Fully comply with requirements of ASCE 7.
   b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Wind Borne Debris Resistance: Identical full size glazed assembly without auxiliary protection, having Florida Building Code FLA (PAD) approval for Large and Small Missile impact and pressure cycling at design wind pressure.
3. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
4. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.
5. Condensation Resistance Factor of Framing: 50, minimum, measured in full accordance with AAMA 1503.

2.04 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, drainage holes and internal weep drainage system.
1. Framing members for interior applications need not be thermally broken.
2. Glazing Stops: Flush.
3. Cross Section: As indicated on drawings.
4. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.

B. Reference Section 08 80 00 - Glazing for additional Content.

C. Swing Doors: Glazed aluminum.
1. Thickness: 1-3/4 inches.
2. Top Rail: 4 inches wide.
3. Vertical Stiles: 4-1/2 inches wide.
4. Bottom Rail: 10 inches wide.
5. Glazing Stops: Square.
6. Finish: Same as storefront.

2.05 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209/B209M.

C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.

D. Structural Steel Sections: ASTM A36/A36M; shop primed.

E. Structural Supporting Anchors: Reference Section 05 12 00 Structural Steel Framing for additional Content.

F. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.

G. Structural Supporting Anchors Attached to Reinforced Concrete Members: Design for welded attachment to weld plates embedded in concrete.

H. Fasteners: Reference Contract Documents for additional Content.

I. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.

J. Concealed Flashings: Galvanized steel, 26 gauge, 0.0179 inch minimum base metal thickness.

K. Concealed Flashings: Sheet aluminum, 26 gauge, 0.017 inch minimum thickness.

L. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.

M. Sealant for Setting Thresholds: Non curing butyl type.

N. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

O. Reference Section 08 80 00 - Glazing for additional Content.

P. Shop and Touch Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

Q. Touch Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.06 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.

B. Reference Section 08 71 00 - Door Hardware for additional Content.

C. Other Door Hardware: Storefront Manufacturer's Products as required to suit applications, this particular Project.
   1. Finish on Hand Contacted Items: Polished chrome.
   2. For each door, include butt hinges, pivots, push handle, pull handle, exit device, narrow stile handle latch, and closer.

D. Weatherstripping: Wool pile, continuous and replaceable; all doors.

E. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; all doors.

F. Threshold: Extruded aluminum, one piece per door opening, ribbed surface, all doors.

G. Hinges: Butt type, swing clear; top and bottom.
   1. Provide all doors.

H. Pivots: Center type; top and bottom.
   1. Provide on doors as indicated.

I. Push/Pull Set: Standard configuration push/pull handles.
   1. Provide all doors.

J. Exit Devices: Panic type.
   1. Provide all doors.

K. Door Closers: Concealed overhead.
   1. Provide all doors.

L. Handle Latch:
   1. Provide all doors.

M. Locks: Dead latch with thumb turn inside ; keyed cylinder outside.
   1. Provide all doors.

N. Automatic Door Operators and Actuators: As directed by Architect.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all dimensions, tolerances, and methods of attachment, all Work, this Section.

B. Confirm all storefront wall openings, adjoining air barrier seal materials are ready to receive Work, this Section, prior to beginning any Work, this Section.

3.02 INSTALLATION

A. Install all Work, this Section, in full accordance with Manufacturer's written instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

I. Install operating sash.

J. Set thresholds in bed of sealant and secure.

K. Install hardware using templates provided.
   1. Reference Section 08 71 01 - Door Hardware Groups for additional Content.

L. Install all glazing, infill panels, using only those methods, as required to achieve all performance criteria delineated within Contract Documents.

M. Install applied muntin grid assembly in accordance with Manufacturer's instructions.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per (3) Three feet, non cumulative.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

A. Provide services storefront Manufacturer's Field Representative, as required to observe installation of system and submit corresponding Report of findings.

B. Reference Section 01 40 00 - Quality Requirements for additional Content.

C. Water Spray Test: Provide water spray quality Test of all storefront components in accordance with AAMA 501.2, during construction process and before installation of any interior finishes.
   1. Perform a minimum of (3) three tests within those areas designated by Architect.
   2. Conduct said Tests within previously designated areas, prior to 10 percent and 50 percent completion of Work.

D. Provide field testing of installed storefront system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.
   1. Perform a minimum of two tests in each designated area as directed by Architect.
   2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.

3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 4.18 psf.
    a. Maximum allowable rate of water penetration in 15-minute test is 0.5 ounce that is not contained in an area with provisions to drain to exterior, or collected on surface of interior horizontal framing member.
4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 1.57 psf.
    a. Maximum allowable rate of air leakage is 0.09 cfm/sq ft.

E. Replace any storefront components that have failed designated field testing, and retest to verify performance complies with Contract Documents.

3.05 ADJUSTING

A. Adjust all Work, this Section, as required for smooth, proper operation.

3.06 CLEANING

A. Remove all protective material from aluminum framed storefront surfaces.

B. Thoroughly clean, wash all aluminum framed storefront surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, while taking care to remove dirt from corners and to wipe all surfaces clean.

C. Upon completion of installation, thoroughly clean all aluminum framed storefront surfaces in full accordance with AAMA 609, 610 and Manufacturer's written instructions.

3.07 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for all doors.

B. Lock cylinders for doors that hardware is specified in other sections.

C. Thresholds.

D. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

A. Section 08 14 16 - Flush Wood Doors.

B. Section 08 16 13 - Fiberglass Doors.

C. Section 08 43 13 - Aluminum Framed Storefronts.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. BHMA (CPD) - Certified Products Directory; Current Edition.

C. BHMA A156.1 - Standard for Butts and Hinges; 2021.

D. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.

E. BHMA A156.4 - Door Closers and Pivots; 2024.

F. BHMA A156.6 - Standard for Architectural Door Trim; 2021.

G. BHMA A156.7 - Template Hinge Dimensions; 2022.

H. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.

I. BHMA A156.20 - Standard for Strap and Tee Hinges, and Hasps; 2021.

J. BHMA A156.22 - Standard for Gasketing; 2021.

K. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

L. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

M. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.

N. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.

P. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all hardware Products with Owner's Representative.

B. Furnish al necessary templates, door, frame preparation to all Manufacturers, fabricators of any Products requiring internal reinforcement, door hardware.

C. Keying Requirements Meeting:

1.05 SUBMITTALS

A. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

B. Shop Drawings, Door Hardware Schedule: Submit detailed listing that includes each item of hardware scheduled to be installed. Use only that door numbering scheme, as included in Contract Documents.

1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
2. Provide complete description for each door listed.

C. Keying Schedule:
1. Submit PDF copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing products Specified within this Section with minimum (15) Fifteen years documented experience.

1.07 DELIVERY, STORAGE, HANDLING

A. Package all hardware items individually; label and identify each package with door opening code, as required to match door hardware schedule.

1.08 WARRANTY

A. Manufacturer's Warranty: Provide detailed Warranty against any defects in material, workmanship for period indicated. Complete all forms within Owner's name and register same with Manufacturer.
1. Closers: (5) Five years, minimum.
2. Exit Devices: (5) Five years, minimum.
3. Locksets and Cylinders: (10) Ten years, minimum.
4. All Remaining Hardware: (3) Three years, minimum.

PART 2 PRODUCTS

2.01 DESIGN, PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
2. Accessibility: ADA Standards and ICC A117.1.
3. Applicable provisions of NFPA 101.
4. Listed and certified compliant with specified standards by BHMA (CPD).
5. Auxiliary Hardware: BHMA A156.16.
6. Straps and Tee Hinges: BHMA A156.20.
7. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
8. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.

D. Lock Function: Provide lock and latch function numbers and descriptions of Manufacturer's series. See Door Hardware Schedule.

E. Fasteners:
1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
a. Aluminum fasteners are not permitted.
b. Provide phillips flat head screws with heads finished to match door surface hardware unless otherwise indicated.
2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
a. Self-drilling (Tek) type screws **are not permitted.**
3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
4. Provide wall grip inserts for hollow wall construction.
5. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.

6. Concealed Fasteners: **Do not** use through or sex bolt type fasteners upon door panel sides, as concealed fastener locations.

2.02 HINGES

A. Hinges: Fully comply with BHMA A156.1, Grade 1.
   1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
      a. Provide hinge width required to clear surrounding trim.
   2. Provide hinges on every swinging door.
   3. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
   4. Provide ball-bearing hinges at each door.
   5. Provide non-removable pins on exterior outswinging doors.
   6. Provide following quantity of butt hinges for each door:
      a. Doors From 60 inches High up to 90 inches High: Three hinges.
      b. Doors 90 inches High up to 120 inches High: Four hinges.
      c. Dutch Doors: Two hinges each leaf.

2.03 REMOVABLE MULLIONS

A. Keyed removable steel mullions.

B. Removal single operation of the mortise cylinder.

C. Self locking when re installed, without use of the cylinder key.

D. 1 1/4" mortise cylinder with straight cam.

E. Finish: Match door frame.

2.04 EXIT DEVICES

A. Exit Devices: Fully comply with BHMA A156.3, Grade 1.

2.05 LOCK CYLINDERS

A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
   1. Coordinate with Owner's standards for keying requirments
   2. Provide cams and/or tailpieces as required for locking devices.
   3. Within specific Door Sections, when provisions for lock cylinder are being referenced to this Section, provide specified lock cylinder and keyed to building keying system, unless otherwise indicated.

2.06 CYLINDRICAL LOCKS

A. Cylindrical Locks (Bored): Fully comply with BHMA A156.2, Grade 1, 4000 Series.
   1. Bored Hole: 2-1/8 inch diameter.
   2. Latchbolt Throw: 1/2 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Finish: To match lock or latch.
   5. Provide a lock for each door, unless otherwise indicated that lock is not required.
   6. Trim: Provide trim as indicated on hardware schedule, and other trim as required for complete installation.

2.07 CLOSERS

A. Closers: Fully comply with BHMA A156.4, Grade 1.
   1. Type: Surface mounted to door.
   2. Provide door closer on each exterior door and where indicated on the hardware shedule.
   3. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
   4. Mount closers as indicated on the hardware schedule. Where mounting is not indicated, provide mounting as follows:

a. At corridor entry doors, mount closer on room side of door.
b. At outswinging exterior doors, mount closer on interior side of door.

2.08 PROTECTION PLATES

A. Protection Plates: Fully comply with BHMA A156.6.

B. Edges: Beveled, all sides.

C. Fasteners: Countersunk screw fasteners.

2.09 KICK PLATES

A. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
1. Size: (10) Ten inch high by 2 inch, less than scheduled door width.

2.10 WALL STOPS

A. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Provide wall stops to prevent damage to wall surface upon opening door.
2. Type: Bumper, concave, wall stop.
3. Material: Aluminum housing with rubber insert.

2.11 WEATHERSTRIPPING, GASKETING

A. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Adjustable.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with brush weatherstripping.

2.12 FINISHES

A. Finishes: Identified in Door Hardware Schedule on the drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all doors, frames are ready to receive Work, this Section; labeled, fire rated doors, frames, properly installed, and dimensions are as shown within Contract Documents.

B. Confirm alll electrical power is available, and of correct characteristics, as required to power, operate corresponding hardware devices.

3.02 INSTALLATION

A. Install all hardware in full accordance with Manufacturer's written instructions and all applicable codes.

B. Install all hardware upon fire rated doors, frames in full accordance with applicable codes and NFPA 80.

C. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
1. For Wood Doors: Install in full compliance with DHI WDHS.3 recommendations.
2. Mounting heights in compliance with ADA Standards:
a. Locksets: 40-5/16 inch.
b. Push Plates/Pull Bars: 42 inch.
c. Deadlocks (Deadbolts): 48 inch.
d. Exit Devices: 40-5/16 inch.

D. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 ADJUSTING

3.04 CLEANING

A. Thoroughly clean all Work, this Section.

B.

3.05 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 08 71 01

DOOR HARDWARE GROUPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 01 Section "General Conditions".
2. Division 06 Section “Rough Carpentry”.
3. Division 06 Section “Finish Carpentry”.
4. Division 08 Section “Operations and Maintenance”.
5. Division 08 Section “Door Schedule”.
6. Division 08 Section “Hollow Metal Doors and Frames”.
7. Division 08 Section “Flush Wood Doors”.
8. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
9. Division 26 Section "Electrical”
10. Division 28 Section “Integrated Access Control Hardware Devices”.

D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

   a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
   b. Complete (risers, point-to-point) access control system block wiring diagrams.
   c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

C. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

D. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.

3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

a. Two Hinges: For doors with heights up to 60 inches.
b. Three Hinges: For doors with heights 61 to 90 inches.
c. Four Hinges: For doors with heights 91 to 120 inches.
d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

a. McKinney (MK) - TA/T4A Series, 5-knuckle.

2.2 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

    a. Pemko (PE).

2.3 POWER TRANSFER DEVICES

A. Concealed Quick Connect Electric Power Transfers: Provide concealed wiring pathway housing mortised into the door and frame for low voltage electrified door hardware. Furnish with Molex™ standardized plug connectors and sufficient number of concealed wires (up to 12) to accommodate the electrified functions specified in the Door Hardware Sets. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Wire nut connections are not acceptable.

1. Manufacturers:

    a. Pemko (PE) - EL-CEPT Series.
    b. Securitron (SU) - EL-CEPT Series.

B. Electric Door Wire Harnesses: Provide electric/data transfer wiring harnesses with standardized plug connectors to accommodate up to twelve (12) wires. Connectors plug directly to through-door wiring harnesses for connection to electric locking devices and power supplies. Provide sufficient number and type of concealed wires to accommodate electric function of specified hardware. Provide a connector for through-door electronic locking devices and from hinge to junction box above the opening. Wire nut connections are not acceptable. Determine the length required for each electrified hardware component for the door type, size and construction, minimum of two per electrified opening.

1. Provide one each of the following tools as part of the base bid contract:

    a. McKinney (MK) - Electrical Connecting Kit: QC-R001.
    b. McKinney (MK) - Connector Hand Tool: QC-R003.

2. Manufacturers:

    a. McKinney (MK) - QC-C Series.

2.4 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:

    a. Rockwood (RO).

B. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:

    a. Rockwood (RO).

2.5 CYLINDERS, KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.
4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Manufacturer’s Standard.

C. Large Format Interchangeable Cores: Provide removable cores (LFIC) as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.

D. Patented Cylinders: ANSI/BHMA A156.5, Grade 1 Certified Products Directory (CPD) listed cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer's United States patents. Cylinders are to be factory keyed with owner having the ability for on-site original key cutting.

1. Patented key systems shall not be established with products that have an expired patent. Expired systems shall only be specified and supplied to support existing systems.
2. Manufacturers:

    a. Corbin Russwin (RU) - Access 3 AP.
    b. Sargent (SA) - Degree DG1.

E. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. New System: Key locks to a new key system as directed by the Owner.

F. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).
4. Construction Control Keys (where required): Two (2).
5. Permanent Control Keys (where required): Two (2).

G. Construction Keying: Provide construction master keyed cylinders.

H. Construction Keying: Provide temporary keyed construction cores.

I. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 MORTISE LOCKS, LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide locksets with functions and features as follows:

    a. Heavy duty 12-gauge wrought steel case.
    b. Stainless steel 3/4" one-piece anti-friction reversible latchbolt with a one-piece hardened stainless steel 1” projection deadbolt.
    c. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
    d. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
    e. Meets UL Certification Directory ZHLL.R21744 for products used in windstorm rated assemblies.
    f. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.13 requirements to 16 million cycles or greater.
    g. Status indicators inside, outside, or on both sides of doors as specified; available with wording for “locked/unlocked”, “vacant/occupied” or custom wording options. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status.
    h. Ten-year limited warranty for mechanical functions.

2. Manufacturers:

    a. Corbin Russwin Hardware (RU) - ML2000 Series.
    b. Sargent Manufacturing (SA) - 8200 Series.

2.1 INTEGRATED WIRED OUTPUT LOCKING DEVICES - MULTI-CLASS READER

A. Integrated Wired Output Multi-Class Mortise Locks: Wiegand or Open Supervised Device Protocol (OSDP) output ANSI A156.13, Grade 1, mortise lockset with integrated card reader with or without keypad option, request-to-exit signaling, door position status switch, and latchbolt monitoring in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle trim, 3/4" deadlocking anti-friction latch, and 1" case-hardened steel deadbolt. Lock is U.L listed and labeled for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.

1. Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand or OSDP compatible access control systems. Latchbolt monitoring and door position switch act in conjunction to report door-in-frame (DPS) and door latched (door closed and latched) conditions.
2. Integrated reader supports the following credentials:

    a. 125kHz proximity credentials: HID, AWID, Indala, and EM4102.
    b. 13.56 MHz proximity credentials: HID Secure Identity Object™ (SIO) on iCLASS Seos, HID iCLASS, HID iCLASS SE/SR, MIFARE Classic, DESFire EV1 and EV2.
    c. 2.4 GHz credentials: Secure Identity Object™ (SIO) on Mobile IDs (Bluetooth Smart)
    d. ISO14443A/B (PIV-compatible Transparent FASC-N read) available with pivCLASS variant.

e. NFC-enabled mobile phones
f. PIN code only or PIN + credential with keypad option.

3. 12VDC external power supply required for reader and lock, with optional 24VDC lock solenoid. Fail safe or fail secure options.
4. Energy Efficient Design: Provide lock bodies which have a holding current draw of 500mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
5. Support end-of-line resistors contained within the lock case.
6. Installation requires only one cable run from the lock to the access control panel without requirements for additional proprietary lock panel interface boards or modules.
7. Installation to include manufacturer's access control panel interface board or module where required for Wiegand or OSDP output protocol.
8. Manufacturers:

a. Corbin Russwin (RU) - ML2000 SN Series.
b. Sargent Manufacturing (SA) - SN200/SN210 8200 Series.

2.2 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.3 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.
8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide exit devices with functions and features as follows:

    a. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
    b. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
    c. No catch points: addition of applied deflectors or other added components are not allowed.

d. No visible plastic.
e. Heavy duty end caps with flush and overlapping options made of stainless steel, brass, or bronze with architectural finishes.
f. Constructed of all stainless steel.
g. Stainless steel pullman type latch with deadlock feature.
h. Narrow or wide style exterior trim as specified in the hardware sets.
i. Center case adjustability on concealed vertical rod exit devices; single operation with hex key individually adjusts top or bottom latches. No retainer screws or clips required to maintain adjustment.
j. Ten-year limited warranty for mechanical features.

2. Electromechanical exit devices shall have the following functions and features:

a. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable in fail safe or fail secure and operate from 12vdc to 24vdc regulated.
b. Wire routing for all non-access control electromechanical functions and EcoFlex trim to be contained within the carrier of the device eliminating the need for cavities in doors to be drilled. Include a protective film so that wires don't get damaged if the rail needs to be removed.
c. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.
d. Options to be available for request-to-exit or enter signaling, latchbolt and touchbar monitoring.
e. Field configurable electrified trim to fail-safe or fail-secure that operates from 12-24VDC.

3. Manufacturers:

a. Corbin Russwin Hardware (RU) - PED4000 / PED5000 Series.
b. Sargent Manufacturing (SA) - PE80 Series.

2.4 INTEGRATED WIRED OUTPUT EXIT DEVICES - MULTI-CLASS READER

A. Integrated Wired Output Multi-Class Exit Hardware: Wiegand output ANSI 156.3 Grade 1 rim, mortise, and vertical rod exit device hardware with integrated card reader with or without keypad option, latchbolt and touchbar monitoring, and request-to-exit signaling, in one complete unit. Hard wired, solenoid driven locking/unlocking control of the lever handle exit trim with 3/4" throw latch bolt. U.L listed and labeled for either panic or "fire exit hardware" for use on up to 3 hour fire rated openings. Available with or without keyed high security cylinder override.

1. Open architecture, hard wired platform supports centralized control of locking units with new or existing Wiegand or OSDP compatible access control systems. Inside push bar (request-to-exit) signaling and door position (open/closed status) monitoring (via separately connected DPS).

2. Integrated reader supports the following credentials:

    a. 125kHz proximity credentials: HID, AWID, Indala, and EM4102.
    b. 13.56 MHz proximity credentials: HID Secure Identity Object™ (SIO) on iCLASS Seos, HID iCLASS, HID iCLASS SE/SR, MIFARE Classic, DESFire EV1 and EV2.
    c. 2.4 GHz credentials: Secure Identity Object™ (SIO) on Mobile IDs (Bluetooth Smart)
    d. ISO14443A/B (PIV-compatible Transparent FASC-N read) available with pivCLASS variant
    e. NFC-enabled mobile phones
    f. PIN code only or PIN + credential with keypad option

3. 12VDC external power supply required for reader. 24VDC required for solenoid operated exit trim. Fail safe or fail secure options.
4. Installation requires only one cable run from the exit hardware to the access control panel without requirements for additional proprietary lock panel interface boards or modules.
5. Competitor Alternates Allowed Option: Installation to include manufacturer's access control panel interface board or module where required for Wiegand or OSDP output protocol.
6. Manufacturers:

    a. Corbin Russwin (RU) - ED5000 SN Series.
    b. Sargent Manufacturing (SA) - SN200/SN210 80 Series.

2.5 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard.

1. Heavy duty surface mounted door closers shall have a 30-year warranty.

2. Manufacturers:

a. Corbin Russwin Hardware (RU) - DC6000 Series.
b. Norton Rixson (NO) - 7500 Series.
c. Sargent Manufacturing (SA) - 351 Series.

2.6 ARCHITECTURAL TRIM AND ACCESSORIES

A. Door, Frame and Wall Protective Trim: ANSI/BHMA A156.6, protective products as specified in the hardware sets. Door protection plates shall be not more than 2" less than door width on stop side and 1” less door width on the pull side or on stop side of pairs of doors. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide protective trim with functions and features as follows:

a. Meets ADA requirements for smooth bottom door surfaces.
b. UL Classified options for use on fire-rated doors up to 3 hours.
c. Fabricated from stainless steel, brass, bronze, aluminum, or high-impact plastic.
d. Available in a variety of sizes, finishes, and profiles to suit aesthetic and functional requirements.
e. Designed to protect doors, frames, and adjacent walls from damage due to impact, abrasion, or traffic.
f. Fasteners included; adhesive-backed options available for select models.
g. Ten-year limited warranty.

2. Manufacturers:

a. Rockwood (RO).

2.7 DOOR STOPS, HOLDERS

A. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Rockwood (RO).

B. Overhead Door Stops and Holders: ANSI/BHMA A156.8, Grade 1 Certified Products Directory (CPD) listed overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Manufacturers:

    a. Norton Rixson (NO).
    b. Rockwood (RO).
    c. Sargent Manufacturing (SA).

2.8 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. Pemko (PE).

2.9 ELECTRONIC ACCESSORIES

A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:

a. Alarm Controls (AK) - CP1-1026 Series.
b. Securitron (SU) - DPS Series.

B. Switching Power Supplies: Provide the least number of power supplies at the appropriate amperage level sufficient to exceed the required total draw for the specified electrified hardware and access control equipment.

1. Power supplies shall meet all functions and features as specified herein.

a. UL listed dual voltage 12 or 24 VDC field selectable continuous output.
b. Tolerates brownout or overvoltage input ± 15% of nominal voltage.
c. Thermal shutdown protection with auto restart.
d. Circuit breaker protection against overcurrent and reverse battery faults.
e. Integrated battery charging circuit to prevent overvoltage on locking devices.
f. Available with a single relay fire trigger or individually triggered relayed outputs.
g. Monitoring options as specified.

2. Manufacturers:

a. Securitron (SU) - AQD Series.

2.10 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.11 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."

4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Integrated Wiegand access control products are required to be installed through current members of the ASSA ABLOY "Certified Integrator" (CI) program.

D. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

E. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

F. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

G. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.

B. Manufacturer’s Abbreviations:

1. MK - McKinney
2. PE - Pemko
3. SU - Securitron
4. RO - Rockwood
5. SA - SARGENT
6. NO - Norton Rixson
7. OT - Other

Hardware Sets

Set: 1.0

Doors: 100, 104, 109

1	Continuous Hinge	CFM_SLF-HD1 PT x Length Required		PE	087100
1	Electric Power Transfer	EL-CEPT	630	SU	087100
1	Narrow Rim Exit Device w/Pull (NL, RX, ELR, Cyl. Dogging)	DG164 16 55 56 PE8504 863	US32D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Closer	351 CPS (HD Cush STP Arm)	EN	SA	087100
1	Drop Plate	351D (as required)	EN	SA	087100
1	Blade Stop Spacer Kit	581-1 or 2 (as required)	EN	SA	087100
1	Rain Guard	346C x Width of Frame Head		PE	087100
1	Gasketing	Provided By Door/Frame Supplier		OT	
1	Sweep	3452CNB x Length Required		PE	087100
1	Threshold	273x224AFGT MSES25SS x Length Required		PE	087100
1	Card Reader/Keypad	Provided by Security Supplier			
1	ElectroLynx Harness (Door)	QC-Cxxx (Size as Required)		MK	087100
1	ElectroLynx Harness (Frame)	QC-C3000P		MK	087100
1	Position Switch	DPS-MW-BK/GY/WH (as required)		SU	087100
1	Power Supply	AQD (Size and Options as required)		SU	087100
1	Wiring Diagram	Elevation and Point to Point as Specified		OT	

Notes: Perimeter gasket by door / frame manufacturer.

Operation:
• Door is normally closed and latched. Exit Device has Night Latch Function, Key retracts latch, door is locked when key is removed)
• Access by valid credential presentation and correct digital code entered in the keypad, releasing the exit latch to allow authorized entry and then relocking.
• Manual egress is always available by pressing the exit device push bar. Request to exit switch in the exit device push bar will signal an authorized egress to that access control system.
• Door position switch will signal the doors OPEN/CLOSED status to the access control panel.
• The exit device is fail secure and will remain latched on activation of fire alarm or in the absence of power.

Set: 2.0

Doors: 119B, 119C, 125

3	Hinge, Full Mortise, Hvy Wt	T4A3386 (NRP and Size as required)	US32D	MK	087100
1	Electric Power Transfer	EL-CEPT	630	SU	087100
1	Access Control Mort Lock (CR/KP, Fail Sec., RX, DPS)	DG164 IDP SN200-82271-24V (CR/KP Tech as Required) LNL	US26D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Closer	351 UO (RA, TJ or PA Mount as Required)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Exterior Door Stop	467-RKW	Black	RO	087100
1	Perimeter Gasketing	303AS (Head & Jambs)		PE	087100
1	Rain Guard	346C x Width of Frame Head		PE	087100
1	Sweep	3452CNB x Length Required		PE	087100
1	Threshold	273x224AFGT MSES25SS x Length Required		PE	087100
1	ElectroLynx Harness (Door)	QC-Cxxx (Size as Required)		MK	087100
1	ElectroLynx Harness (Frame)	QC-C3000P		MK	087100
1	Position Switch	DPS-MW-BK/GY/WH (as required)		SU	087100
1	Power Supply	AQD (Size and Options as required)		SU	087100
1	Wiring Diagram	Elevation and Point to Point as Specified		OT	

Notes: Operation:
• Door is normally closed and latched. (Lockset is Storeroom Function, Key retracts latch, door is locked when key is removed)
• Access by valid credential presentation and correct digital code entered in the keypad (Card Reader and Keypad are integrated in the lockset escutcheon), releasing the lockset lever to allow authorized entry and then relocking.
• Manual egress is always available by turning the interior lockset lever. Request to exit switch integrated in the lockset will signal an authorized egress to that access control system.
• Door position switch will signal the doors OPEN/CLOSED status to the access control panel.
• The electrified lockset is fail secure and will remain locked on activation of fire alarm or in the absence of power.

Set: 3.0

Doors: 129B, 130B

3	Hinge, Full Mortise, Hvy Wt	T4A3386 (NRP and Size as required)	US32D	MK	087100
1	Electric Power Transfer	EL-CEPT	630	SU	087100
1	Fire Rated Rim Exit Device (AC Trim-Fail Sec., RX)	DG164 12 SN200-PE8874 (CR Tech as Required) WEL	US32D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Closer	351 CPS (HD Cush STP Arm)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Perimeter Gasketing	303AS (Head & Jambs)		PE	087100
1	Sweep	3452CNB x Length Required		PE	087100
1	Threshold	273x224AFGT MSES25SS x Length Required		PE	087100
1	ElectroLynx Harness (Door)	QC-Cxxx (Size as Required)		MK	087100
1	ElectroLynx Harness (Frame)	QC-C3000P		MK	087100
1	Power Supply	AQD (Size and Options as required)		SU	087100
1	Wiring Diagram	Elevation and Point to Point as Specified		OT	

Notes: Operation:
• Door is normally closed and locked. Exit Trim is Storeroom Function, (Key retracts latch, door is locked when key is removed)
• Access by valid credential presentation (Card Reader is integrated in the Exit Trim escutcheon), releasing the exit trim lever to allow authorized entry and then relocking.
• Manual egress is always available by pressing the exit device push bar. Request to exit switch integrated in the exit device will signal an authorized egress to the access control system.
• Door position switch will signal the doors OPEN/CLOSED status to the access control panel.
• The exit trim is fail secure and will remain locked on activation of fire alarm or in the absence of power.

Set: 4.0

Doors: 129A, 130A

3	Hinge, Full Mortise, Hvy Wt	T4A3786 (NRP and size as required)	US26D	MK	087100
1	Fire Rated Rim Exit Device (PASS)	12 PE8815 WEL	US32D	SA	087100
1	Surface Closer	351 UO (RA, TJ or PA Mount as Required)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Wall or Floor Stop (as Required)	403 (or) 441CU (As Required)	US26D	RO	087100
1	Perimeter Gasketing	S88BL (Head and Jambs)		PE	087100

Set: 5.0

Doors: 105A

3	Hinge, Full Mortise, Hvy Wt	T4A3786 (NRP and size as required)	US26D	MK	087100
1	Electric Power Transfer	EL-CEPT	630	SU	087100
1	Access Control Mort Lock (CR, Fail Sec., RX, DPS)	DG164 IDP SN200-82271-24V (CR Tech as Required) LNL	US26D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Closer	351 UO (RA, TJ or PA Mount as Required)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Wall or Floor Stop (as Required)	403 (or) 441CU (As Required)	US26D	RO	087100
1	Silencer	608		RO	087100
1	ElectroLynx Harness (Door)	QC-Cxxx (Size as Required)		MK	087100
1	ElectroLynx Harness (Frame)	QC-C3000P		MK	087100
1	Power Supply	AQD (Size and Options as required)		SU	087100
1	Wiring Diagram	Elevation and Point to Point as Specified		OT	

Notes: Operation:
• Door is normally closed and locked. Lockset is Storeroom Function, (Key retracts latch, door is locked when key is removed)
• Access by valid credential presentation (Card Reader is integrated in the lockset escutcheon), releasing the lockset lever to allow authorized entry and then relocking.
• Manual egress is always available by turning the interior lockset lever. Request to exit switch integrated in the lockset will signal an authorized egress to that access control system.
• Door position switch will signal the doors OPEN/CLOSED status to the access control panel.
• The electrified lockset is fail secure and will remain locked on activation of fire alarm or in the absence of power.

Set: 6.0

Doors: 121

3	Hinge, Full Mortise, Hvy Wt	T4A3786 (NRP and size as required)	US26D	MK	087100
1	Electric Power Transfer	EL-CEPT	630	SU	087100
1	Access Control Mort Lock (CR, Fail Sec., RX, DPS)	DG164 IDP SN200-82271-24V (CR Tech as Required) LNL	US26D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Closer	351 CPS (HD Cush STP Arm)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
3	Silencer	608		RO	087100
1	ElectroLynx Harness (Door)	QC-Cxxx (Size as Required)		MK	087100
1	ElectroLynx Harness (Frame)	QC-C3000P		MK	087100
1	Power Supply	AQD (Size and Options as required)		SU	087100
1	Wiring Diagram	Elevation and Point to Point as Specified		OT	

Notes: Operation:
• Door is normally closed and locked. Lockset is Storeroom Function, (Key retracts latch, door is locked when key is removed)
• Access by valid credential presentation (Card Reader is integrated in the lockset escutcheon), releasing the lockset lever to allow authorized entry and then relocking.
• Manual egress is always available by turning the interior lockset lever. Request to exit switch integrated in the lockset will signal an authorized egress to that access control system.
• Door position switch will signal the doors OPEN/CLOSED status to the access control panel.
• The electrified lockset is fail secure and will remain locked on activation of fire alarm or in the absence of power.

Set: 7.0

Doors: 105B

3	Hinge, Full Mortise, Hvy Wt	T4A3386 (NRP and Size as required)	US32D	MK	087100
1	Electric Power Transfer	EL-CEPT	630	SU	087100
1	Access Control Mort Lock (CR, Fail Sec., RX, DPS)	DG164 IDP SN200-82271-24V (CR Tech as Required) LNL	US26D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Overhead Holder/Stop	9-X36 (Size as Required)	630	NO	087100
1	Surface Closer	351 OZ (Top Jamb Mount)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Perimeter Gasketing	303AS (Head & Jambs)		PE	087100
1	Sweep	3452CNB x Length Required		PE	087100
1	Threshold	273x224AFGT MSES25SS x Length Required		PE	087100
1	ElectroLynx Harness (Door)	QC-Cxxx (Size as Required)		MK	087100
1	ElectroLynx Harness (Frame)	QC-C3000P		MK	087100
1	Power Supply	AQD (Size and Options as required)		SU	087100
1	Wiring Diagram	Elevation and Point to Point as Specified		OT	

Notes: Operation:
• Door is normally closed and locked. Lockset is Storeroom Function, (Key retracts latch, door is locked when key is removed)
• Access by valid credential presentation (Card Reader is integrated in the lockset escutcheon), releasing the lockset lever to allow authorized entry and then relocking.
• Manual egress is always available by turning the interior lockset lever. Request to exit switch integrated in the lockset will signal an authorized egress to that access control system.
• Door position switch will signal the doors OPEN/CLOSED status to the access control panel.
• The electrified lockset is fail secure and will remain locked on activation of fire alarm or in the absence of power.

Set: 8.0

Doors: 106

3	Hinge, Full Mortise	TA2714 (NRP and size as required)	US26D	MK	087100
1	Storeroom/Closet Lock	DG164 8204 LNL	US32D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Closer	351 CPS (HD Cush STP Arm)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
3	Silencer	608		RO	087100

Set: 9.0

Doors: 115

3	Hinge, Full Mortise, Hvy Wt	T4A3386 (NRP and Size as required)	US32D	MK	087100
1	Storeroom/Closet Lock	DG164 8204 LNL	US32D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Overhead Holder/Stop	9-X36 (Size as Required)	630	NO	087100
1	Surface Closer	351 OZ (Top Jamb Mount)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Perimeter Gasketing	S88BL (Head and Jambs)		PE	087100

Set: 10.0

Doors: 122

3	Hinge, Full Mortise, Hvy Wt	T4A3786 (NRP and size as required)	US26D	MK	087100
1	Classroom Lock	DG164 8237 LNL	US32D	SA	087100
1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	Surface Overhead Holder/Stop	9-X36 (Size as Required)	630	NO	087100
1	Surface Closer	351 OZ (Top Jamb Mount)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Perimeter Gasketing	S88BL (Head and Jambs)		PE	087100

Set: 11.0

Doors: 123

3	Hinge, Full Mortise	TA2714 (NRP and size as required)	US26D	MK 087100
1	Privacy Lock w/OCC IND	V21 8265 LNL	US32D	SA 087100
1	Surf Overhead Stop	10-X36 (Size as Required)	630	NO 087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO 087100
1	Silencer	608		RO 087100
1	Coat Hook	RM801	US26D	RO 087100

Set: 12.0

Doors: 107

3	Hinge, Full Mortise	TA2714 (NRP and size as required)	US26D	MK 087100
1	Privacy Lock w/OCC IND	V21 8265 LNL	US32D	SA 087100
1	Surface Closer	351 UO (RA, TJ or PA Mount as Required)	EN	SA 087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO 087100
1	Wall or Floor Stop (as Required)	403 (or) 441CU (As Required)	US26D	RO 087100
3	Silencer	608		RO 087100
1	Coat Hook	RM801	US26D	RO 087100

Set: 13.0

Doors: 110, 111, 114, 116, 117, 118

3	Hinge, Full Mortise, Hvy Wt	T4A3786 (NRP and size as required)	US26D	MK 087100
1	Privacy Lock w/OCC IND	V21 8265 LNL	US32D	SA 087100
1	Surface Closer	351 UO (RA, TJ or PA Mount as Required)	EN	SA 087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO 087100
1	Wall or Floor Stop (as Required)	403 (or) 441CU (As Required)	US26D	RO 087100
1	Perimeter Gasketing	S88BL (Head and Jambs)		PE 087100
1	Coat Hook	RM801	US26D	RO 087100

Set: 14.0

Doors: 112, 113, 115A

3	Hinge, Full Mortise, Hvy Wt	T4A3786 (NRP and size as required)	US26D	MK	087100
1	Privacy Lock w/OCC IND	V21 8265 LNL	US32D	SA	087100
1	Surface Overhead Holder/Stop	9-X36 (Size as Required)	630	NO	087100
1	Surface Closer	351 OZ (Top Jamb Mount)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Perimeter Gasketing	S88BL (Head and Jambs)		PE	087100
1	Coat Hook	RM801	US26D	RO	087100

Set: 15.0

Doors: 127

6	Hinge, Full Mortise	TA2714 (NRP and size as required)	US26D	MK	087100
1	Self Latching Flush Bolt Set	2845 / 2945 (as required)	US26D	RO	087100
1	Dust Proof Strike	570	US26D	RO	087100
1	Passage Latch	8215 LNL	US32D	SA	087100
2	Surf Overhead Stop	10-X36 (Size as Required)	630	NO	087100
2	Silencer	608		RO	087100

Set: 16.0

Doors: 103, 108, 124

3	Hinge, Full Mortise	TA2714 (NRP and size as required)	US26D	MK	087100
1	Passage Latch	8215 LNL	US32D	SA	087100
1	Wall or Floor Stop (as Required)	403 (or) 441CU (As Required)	US26D	RO	087100
1	Silencer	608		RO	087100

Set: 17.0

Doors: 101

3	Hinge, Full Mortise	TA2714 (NRP and size as required)	US26D	MK	087100
1	Passage Latch	8215 LNL	US32D	SA	087100
1	Surf Overhead Stop	10-X36 (Size as Required)	630	NO	087100
3	Silencer	608		RO	087100

Set: 18.0

Doors: 120

3	Hinge, Full Mortise, Hvy Wt	T4A3786 (NRP and size as required)	US26D	MK	087100
1	Passage Latch	8215 LNL	US32D	SA	087100
1	Surface Closer	351 UH	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Wall or Floor Stop (as Required)	403 (or) 441CU (As Required)	US26D	RO	087100
3	Silencer	608		RO	087100

Set: 19.0

Doors: 102

3	Hinge, Full Mortise, Hvy Wt	T4A3786 (NRP and size as required)	US26D	MK	087100
1	Passage Latch	8215 LNL	US32D	SA	087100
1	Surface Closer	351 UO (RA, TJ or PA Mount as Required)	EN	SA	087100
1	Kick Plate	K1050 10" high BEV CSK	US32D	RO	087100
1	Wall or Floor Stop (as Required)	403 (or) 441CU (As Required)	US26D	RO	087100
1	Perimeter Gasketing	S88BL (Head and Jambs)		PE	087100

Set: 20.0

Doors: 119D, 119E, 119F, 119G

1	LFIC Core	Large Format Interchangeable Core - Keyed as directed by Owner	US15	SA	087100
1	LFIC Mortise Cylinder Housing	Size and Cam as required	US32D	SA	087100
1		All Hardware Provided By Door Supplier			

END OF SECTION

SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Reference Drawings for additional Content and Glazing Units.

C. Glazing units.

D. Glass coatings.

E. Glazing compounds.

1.02 RELATED REQUIREMENTS;

A. Section 08 11 13 - Hollow Metal Doors and Frames.

B. Section 08 43 13 - Aluminum Framed Storefronts.

C. Section 08 44 13 - Glazed Aluminum Curtain Walls.

D. Section 08 51 13 - Aluminum Windows.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).

E. ASTM C1036 - Standard Specification for Flat Glass; 2025.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

H. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

I. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2024.

J. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

K. GANA (GM) - GANA Glazing Manual; 2022.

L. GANA (LGRM) - Laminated Glazing Reference Manual; 2019.

M. GANA (SM) - GANA Sealant Manual; 2008.

N. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use; 1990 (Reaffirmed 2016).

O. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

P. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

Q. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2023.

1.04 SUBMITTALS

A. Product Data on Insulating Glass Unit, Glazing Unit, and Plastic Film Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

B. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

C. Samples: Provided (2) Two Product Samples, Manufacturer's standard size, as required to accurately represent construction, glazing, color, tint and finish.

D. Warranty Documentation: Submit Manufacturer detailed Warrant, ensure all forms have been completed within Owner's Name and registered with said Manufacturer.

1.05 QUALITY ASSURANCE

A. Perform all Work in full accordance with GANA (GM), GANA (LGRM), IGMA TM-3000 and Manufacturer's written installation instructions. Store and maintain (1) One copy, each document upon Existing Project Site

B. Manufacturer Qualifications: Company specializing in Manufacturing Products delineated within Contract Documents, minimum (15) Fifteen years documented experience.

C. Installer Qualifications: Company specializing in performing Work Specified this Section, minimm (15) Fifteen years documented experienc.

1.06 FIELD CONDITIONS

A. **Do not** any Work, this Section, when ambient temperature is less than (50) Fifty de degrees Fahrenheit.

B. Maintain minimum ambient temperature before, during and mimimum (72) Seventy Two hours immediately following placement of all Work, this Section.

1.07 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Insulating Glass Units: Provide minmum (10) Ten Year Manufacturer's Warranty, as required to include coverage for seal failure, interpane dusting or misting, including providing al Products to replace failed units.

C. Laminated Glass: Provide minimum 910) Ten Year Manufacturer's Warranty, as required to include coverage for delamination, including providing all Products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:
   1. Cardinal Glass Industries: www.cardinalcorp.com.
   2. Guardian Glass, LLC: www.guardianglass.com.
   3. Pilkington North America Inc: www.pilkington.com.
   4. Saint Gobain North America: www.saint-gobain.com.
   5. Vitro Architectural Glass: www.vitroglazings.com.
   6. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PERFORMANCE REQUIREMENTS, EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
   1. Design Pressure: Calculated in accordance with ASCE 7.
   2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.

3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7
4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
5. Glass thicknesses listed are minimum.

B. Weather Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
1. In conjunction with all weather barrier related materials delineated within Contract Documents, as follows:
2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.
3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Fully comply with all NFRC 300 testing methods.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
5. Tinted Type: ASTM C1036, Class 2 - Tinted, Quality - Q3, with color and performance characteristics as indicated.
6. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
1. Basis of Design: Vitro Architectural Glass: www.vitroglazings.com.
2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Insulating Glass Units: Types as indicated.
1. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
2. Warm-Edge Spacers: Low-conductivity thermoplastic with desiccant warm-edge technology design.
   a. Spacer Width: As required for specified insulating glass unit.
   b. Spacer Height: Manufacturer's standard.
3. Spacer Color: Black.
4. Edge Seal:
   a. Dual Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
   b. Color: Black.
5. Purge interpane space with dry air, hermetically sealed.

C. Type G5 Insulating Glass Units: Vision glass, double glazed.
   1. Space between lites filled with air.
   2. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
      b. Coating: Solarban 60 solar control (sputtered), on #2 surface.
   3. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
      a. Tint: Clear.
   4. Total Thickness: 1 inch.
   5. Glazing Method: Dry glazing method, gasket glazing.

D. Type G6 - Insulating Glass Units: Safety glazing.
   1. Applications:
      a. Glazed lites in exterior doors.
      b. Glazed sidelights and panels next to doors.
      c. Other locations required by applicable federal, state, and local codes and regulations.
      d. Other locations indicated on drawings.
   2. Space between lites filled with argon.
   3. Glass Type: Same as Type G5 except use fully tempered float glass for both outboard and inboard lites.
   4. Total Thickness: 1/2 inch.
   5. Warm edge spacer.
   6. Glazing Method: Dry glazing method, gasket glazing.

2.05 BASIS OF DESIGN, INSULATING GLASS UNITS

A. Basis of Design - Insulating Glass Units: Vision glazing, with low-e coating.
   1. Applications: Exterior insulating glass glazing unless otherwise indicated.
   2. Glazing Method: Dry glazing method, gasket glazing.
   3. Spacer Color: Black.
   4. Edge Seal:
      a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
   5. Color: Black.
   6. Purge interpane space with dry air, hermetically sealed.
   7. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet between point of fabrication and point of installation to permit pressure equalization of air space.
      a. Capillary Tubes: Tubes to remain open and be of length and material type in accordance with insulating glass fabricator's requirements.
   8. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
   9. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
      a. Low E Coating: Vitro Architectural Glass (formerly PPG Glass) Solarban 60 on #2 surface.
   10. Inboard Lite: Heat-strengthened float glass, 1/4 inch thick.

2.06 GLAZING UNITS

A. Type G14 Radiation Shielding Glazing: Transparent lead-bearing glass for gamma and/or X-ray protection.
   1. Applications: Vision panels located in lead lined partitions and other locations indicated on drawings.
   2. Thickness: Lead equivalency requirement.
   3. FDA Registration: Provide product registered with FDA as a medical device in category KPY, Personnel Protective Shield.
   4. Glazing Method: As recommended by Manufacturer.

2.07 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 EXECUTION

3.01 VERIFICATION, CONDITIONS

A. **Verify all** surfaces, glazing channels, recesses are thoroughly clean, free of any obstructions that may impede moisture movement, weeps are clear and that all support framing is ready to receive glazing system.

B. Proceed with glazing system installation, only after all unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. **Thoroughly clean all** contact surfaces with Manufacturer recommended, appropriate solvent, wipe dry within maximum of 24 hours before glazing. **Remove all** coatings that are not tightly bonded to substrates.

B. **Seal all** glazing channels, recesses with substrate compatible primer, sealer.

3.03 INSTALLATION, GENERAL

A. **Install all** glazing in full compliance with written instructions of glass, gaskets, and other glazing material Manufacturers.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. **Do not** exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent all glass from contact with any contaminating substances that may be the result of construction operations such as and not limited to the following; weld splatter, fire safing, plastering, mortar droppings, and paint.

3.04 CLEANING

A. **Remove all** excess glazing materials from finish surfaces, immediately after application, using only those solvents, cleaners recommended by Manufacturers.

B. **Remove all** nonpermanent labels, immediately after glazing installation has complete.

C. **Thoroughly clean all** glazing surfaces, in full accordance with Manufacturer's written recommendations.

3.05 PROTECTION

A. Following completion of all Work, this Section, immediately mark panes with "X" by using removalble tape, paste,only, **do not mark** heat absorbing or reflective units.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 08 83 00
MIRRORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Glass mirrors.
   1. Mirrors.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

1.03 QUALITY ASSURANCE

A. Fabricate, store, transport, receive, install and thoroughly clean all mirrors in full accordance with Manufacturer's written recommendations.

1.04 FIELD CONDITIONS

A. **Do not install any mirrors** when ambient temperature is less than (50) Fifty degrees, Fahrenheit.

B. Maintain minimum ambient temperature before, during and (36) Thirty Six hours immediately following installation.

1.05 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Provide Manufacturer's (15) Fifteen Year Warranty for rall eflective coatings, all mirrors and replacement of same.

PART 2 PRODUCTS

2.01 MATERIALS

A. Mirror Glass: ASTM C1036, Type 1 - Transparent Flat, Class 1 - Clear, Quality - Q1 (high-quality mirrors); silvering, protective coating, and quality requirements in compliance with ASTM C1503.
   1. Thickness: 1/4 inch.

2.02 ACCESSORIES

A. Glazing Clips: Manufacturer's standard type.

B. Mirror Attachment Accessories: Stainlesss steel "J" Profile, continuous channels.

C. Mirror Adhesive: Silicone pr -polymer based, chemically compatible with mirror coating and wall substrate.
   1. Application Temperature: Minus (35) Thirty Five to (140) One Hundred Forty degrees, Fahrenheit, all contact surfaces.
   2. Volatile Organic Content: Maintain at less than (7) Seven percent by weight.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all openings for mirrored glazing are correctly sized, located.

B. Confirm all mirrors surfaces, frames, recesses are thoroughly clean, free of any obstructions, and ready for installation.

3.02 PREPARATION

A. Thoroughly clean all mirror surfaces, only with Manufacturer previously approved solvent, wipe dry.

B. Seal all porous mirror frames, recesses with substrate compatible primer or sealer. Prime all surfaces scheduled to receive sealant.

C. Prepare entire installation, in full accordance with ASTM C1193,for solvent release sealants, and install sealant in full accordance with Manufacturer's instructions.

3.03 INSTALLATION

A. Install all mirrors in full accordance with Manufacturer's recommendations.

B. Set all mirrors plumb, level, and free of any optical distortion.

C. Set all mirrors with proper edge clearance, free of all surrounding construction, including countertops or backsplashes.

D. Frameless Mirrors: Set all mirrors with clips, anchor rigidly to wall construction.

3.04 CLEANING, PROTECTION

A. Remove all wet glazing materials.

B. Remove all labels.

C. Thoroughly clean all Work, this Section.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Common Work Results for Flooring Preparation.

1.02 RELATED REQUIREMENTS

A. Section 01 22 00 - Unit Prices.

B. Section 01 23 00 - Alternates.

C. Section 01 40 00 - Quality Requirements.

D. Section 03 30 00 - Cast in Place Concrete.

1.03 PRICE, PAYMENT PROCEDURES

A. Alternates: Reference Section 01 23 00 - Alternates for additional Content.

B. Alternate for Alternate Flooring Adhesive: **Do not** include cost of alternate adhesive within base bid; state upon bid form, total additional cost for alternate adhesive, installed, in the event such remediation may be required.

C. Alternate for Remedial Floor Coating or Sheet Membrane: **Do not** include cost of floor coating or underlayment within base bid; state upon bid form, total additional cost for floor coating, installed, in the event such remediation may be required.

D. Unit Prices: Reference Section 01 22 00 - Unit Prices for additional Content.

1.04 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 50 mm [2 in.] Cube Specimens); 2024.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

C. ASTM D4259 - Standard Practice for Preparation of Concrete by Abrasion Prior to Coating Application; 2024.

D. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

E. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

F. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

G. RFCI (RWP) - Recommended Work Practices for Removal of Resilient Floor Coverings; 2018.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.06 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Visual Observation Report: For existing floor coverings to be removed.

C. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

D. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.

1. Manufacturer's qualification statement.
2. Certificate: Manufacturer's certification of compatibility with types of flooring applied over remedial product.
3. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
4. Manufacturer's installation instructions.
5. Specimen Warranty: Copy of warranty to be issued by coating Manufacturer and certificate of underwriter's coverage of warranty.

E. Testing Agency's Report:
1. Description of all areas tested; include plans and photographs if hel
2. Summary of conditions encountered.
3. Moisture and alkalinity test reports.
4. Copies of specified test methods.
5. Recommendations for remediation of unsatisfactory surfaces.
6. Product data for recommended remedial coating.
7. Certificate: Include certification of accuracy by authorized official of testing agency.
8. Submit report directly to Owner.
9. Submit report to Architect.
10. Submit report not more than two business days after conclusion of testing.

F. Adhesive Bond and Compatibility Test Report.

G. Floor Moisture Testing Technician Certificate: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician- Grade I certificate.

1.07 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing will be performed by an independent testing agency employed and paid by Owner.

B. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.

C. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency.

D. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
2. Acceptable Testing Agencies:
a. Independent Floor Testing & Inspection, Inc.: www.ifti.com.
b. Additional Testing Agencies, as approved by Owner, Architect

E. Contractor's Responsibility Relating to Independent Agency Testing:
1. Provide access for and cooperate with testing agency.
2. Confirm date of start of testing at least 10 days prior to actual start.
3. Allow minimum (6) Six working days, for Existing Project Site Testing,Testing Agency activities.
4. Achieve and maintain allspecified ambient conditions.
5. Notify Owner when specified ambient conditions have been achieved and when testing will start.
6. Notify Architect when specified ambient conditions have been achieved and when testing will start.

F. Floor Moisture Testing Technician Qualifications: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician Certification- Grade I.

G. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at

least 3 project references showing at least 3 years' experience installing moisture emission coatings.

1.08 DELIVERY, STORAGE, HANDLING

A. Deliver, store, handle and protect all Products, in full accordance with Manufacturer's written instructions.

B. Deliver all materials within Manufacturer's packaging; include installation instructions.

C. Prevent all materials from freezing.

1.09 FIELD CONDITIONS

A. Maintain ambient temperature within all spaces where concrete testing is being performed, and for at least (48) Forty Eight hours prior to testing, at not less than (70) Seventy degrees Fahreheit, nor more than (80) Eighty degrees Fahrenheit.

B. Maintain relative humidity within all spaces where concrete testing is being performed, for at least (48) Forty Eight hours prior to testing, at not less than (45) Forty FIve percent.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering Manufacturer's recommended Product, suitable for conditions, and compatible with adhesive and floor covering, this particular Project Site. In the absence of any recommendation from flooring Manufacturer, provide Product with following characteristics:
   1. Cementitious moisture, mildew, alkali resistant compound, compatible with floor covering, floor covering adhesive and capable of being feathered to nothing at edges.
   2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.
   3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in full accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
   4. Products:
      a. ARDEX Engineered Cements: www.ardexamericas.com.
      b. Floor Seal Technology, Inc: www.floorseal.com.
      c. H.B. Fuller Construction Products, Inc.: www.tecspecialty.com.
      d. LATICRETE International, Inc.: www.laticrete.com.
      e. USG Corporation : www.usg.com.
      f. Substitutions: Reference Section 01 60 00- Product Requirements for additional Content.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating: Single or multi layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
   1. Thickness: 1/8 inch, maximum.
   2. Thickness: As required for application and in accordance with Manufacturer's installation instructions.
   3. Use only Product recommended by independent Testing Agency.
   4. Products:
      a. Allied Construction Technologies, Inc.: www.actechperforms.com.
      b. ARDEX Engineered Cements: www.ardexamericas.com.
      c. Bona US: www.bona.com.
      d. Crown Polymers, a division of American Polymers Corporation: www.crownpolymers.com.

e. Custom Building Products: www.custombuildingproducts.com.
f. Floor Seal Technology, Inc.: www.floorseal.com.
g. GCP Applied Technologies: www.gcpat.com.
h. H.B. Fuller Construction Products, Inc. www.tecspecialty.com.
i. H.B. Fuller Construction Products, Inc; TEC LiquiDam EZ: www.tecspecialty.com.
j. Koster American Corporation: www.kosterusa.com.
k. LATICRETE International, Inc; LATICRETE VAPOR BAN E: www.laticrete.com.
l. Loba-Wakol, LLC; WAKOL PU 280 Moisture Barrier: www.loba-wakol.com.
m. Mapei Corporation; Planiseal VS: www.mapei.com.
n. Maxxon Corporation; Maxxon MVP One Primer: www.maxxon.com.
o. Polycoat Products; Polycoat PC FMB: www.polycoatusa.com.
p. Proflex Products, Inc; Moisture Barrier 25: www.proflex.us.com.
q. Rust-Oleum Corporation; TVB - Topside Vapor Barrier 100% Solids: www.rustoleum.com.
r. SINAK Corporation; VECT-R: www.sinak.com.
s. Stauf USA, LLC; ERP-270 Perma-Seal: www.staufusa.com.
t. USG Corporation; Durock CoverPrep: www.usg.com.
u. UZIN UTZ NORTH AMERICA, INC; UZIN PE 460 with UZIN PE 280: https://us.uzin.com.
v. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Remedial Floor Treatment: Penetrating, spray applied, silicate based Product intended by its Manufacturer to resist water vapor transmission, sufficient to meet flooring Manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
1. Use product recommended by testing agency.
2. Products:
a. AVECS, LLC; RE-ACT: www.avecs.build.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Remedial Floor Sheet Membrane: Pre-formed multi-ply sheet membrane installed over concrete subfloor and intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.
1. Thickness: 28 mil (0.028 inch).
2. Tape: Types recommended by underlayment manufacturer to install membrane and cover seams.
3. Products:
a. GCP Applied Technologies: www.gcpat.com.
b. Mapei Corporation: www.mapei.com.
c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Follow recommendations of testing agency.

B. Perform following operations in the order indicated:
1. Existing concrete slabs (on grade and elevated) with existing floor coverings:
a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
b. Removal of existing floor covering.
2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
a. **Do not** attempt to remove coating or penetrating material.

b. **Do not** abrade surface.
c. Remove existing coatings and curing agents from surface according to recommendations of remedial coating manufacturer.
d. Prepare surface according to recommendations of remedial coating Manufacturer and according to ASTM D4259.

3. Preliminary cleaning.
4. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
5. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
6. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
7. Specified remediation, if required.
8. Patching, smoothing, and leveling, as required.
9. Other preparation specified.
10. Adhesive bond and compatibility test.
11. Protection.

C. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re test after correction.
2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.

3.02 REMOVAL, EXISTING FLOOR COVERINGS

A. Fully comply with all local, State,Federal and those Local Authorities having Jurisdiction regulations, recommendations of RFCI (RWP), as applicable to this particular Project.

B. Dispose of all previously removed materials, in full accordance with all local, State, Federal and those Local Authorities having Jurisdiction, regulations.

3.03 PRELIMINARY CLEANING

A. Thoroughly clean all floors of any dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, milde or other materials that might prevent adhesive bond.

B. **Do not** use solvents or other chemicals for cleaning.

3.04 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event any testing values exceed floor covering Manufacturer's limits, perform remediation as indicated. In the absence of Manufacturer limits, perform remediation if any Test values

exceed (30 Threee pounds per (1000) One Thousand square feet, wtihin a (24) Twenty Four hour period.

F. Report: Report all information required by the test method.

3.05 INTERNAL RELATIVE HUMIDITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in full accordance with ASTM F2170 Procedure A and as follows.

D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.

F. Report: Report all information required by the test method.

3.06 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.

1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately (3) Three minutes, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
3. Use of a digital pH meter with probe is acceptable; follow meter Manufacturer's instructions.

C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.07 PREPARATION

A. Protection of all Work in Place.

B. Reference individual floor covering Section(s) for additional Content.

C. Fully comply with all recommendations, Testing Agency.

D. Fully comply with all written requirements, recommendations, floor covering Manufacturer.

E. Fill and smooth all surface cracks, grooves, depressions, control joints and other non moving joints, irregularities within patching compound.

F. **Do not** fill expansion joints, isolation joints, or any other moving joints.

3.08 ADHESIVE BOND, COMPATIBILITY TESTING

A. Fully comply with all requirements, recommendations of floor covering Manufacturer.

3.09 APPLICATION, REMEDIAL FLOOR COATING

A. Fully comply with all written requirements, recommendations, coating Manufacturer.

3.10 APPLICATION, REMEDIAL FLOOR TREATMENT

A. Fully comply with all written requirements, recommendations of treatment Manufacturer.

3.11 INSTALLATION, REMEDIAL FLOOR SHEET MEMBRANE

A. Install in full accordance with sheet membrane Manufacturer's written instructions.

3.12 PROTECTION

A. Fully cover all Work, this Section, heavy duty durable constrution grade covering.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Metal channel ceiling framing.

D. Acoustic insulation.

E. Cementitious backing board.

F. Gypsum wallboard.

G. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 05 40 00 - Cold Formed Metal Framing.

B. Section 06 10 53 - Miscellaneous Rough Carpentry.

C. Section07 21 00 - Thremal Insulation.

D. Section 07 29 00 - Weather Barriers.

E. Section 07 26 00 - Vapor Retarders.

F. Section 07 27 00 - Air Barriers.

G. Section 07 84 00 - Firestopping.

H. Section 07 92 00 - Joint Sealants.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).

B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

C. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).

D. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

E. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

G. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.

H. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

I. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

J. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

K. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2024.

L. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

M. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020 (Reapproved 2024).

N. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2022, with Editorial Revision (2023).

O. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.

P. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

Q. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

R. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

S. ASTM E413 - Classification for Rating Sound Insulation; 2022.

T. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

U. GA-600 - Fire Resistance and Sound Control Design Manual; 2024.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of gypsum board assemblies with size, location and installation of service utilities.

B. Sequencing: Install service utilities in an orderly and expeditious manner.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data:
   1. Provide data on metal framing, gypsum board, accessories, and joint finishing system.
   2. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

C. Test Reports: For stud framing products that do not comply with AISI S220 or ASTM C754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing Work of this Section, minimum (20)Twenty years documented experience.

1.07 DELIVERY, STORAGE, HANDLING

A. Reference Section 01 74 19 - Construction Waste Management and Disposal for additional Content.

B. Store all gypsum Products, accessories indoors and keep above freezing. Elevate boards above floor, on nonwicking supports, in full accordance with Manufacturer's written recommendations.

C. Store all metal products, as required to prevent corrosion.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies, while fully complying with ASTM C840 and GA-216.

B. Fire Resistance Rated Assemblies: Provide completed assemblies in full compliance with all applicable codes,

2.02 METAL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
   1. Structural Grade: As required to meet design criteria.

2. Corrosion Protection Coating Designation: G40, or equivalent in accordance with AISI S220.

B. Nonstructural Framing System Components: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/120 at 5 psf.
   1. Studs: "C" shaped with knurled or embossed faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: "C" shaped.
   4. Flexible Track: Flexible framing consisting of adjustable leg straps and pivoting, hinged track brackets designed to provide curved framing assemblies of varying radii.

C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
   2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot dipped galvanized coating.
   3. Provide components UL listed for use in UL listed fire resistance rated head of partition joint systems as delineated within Contract Documents.
   4. Provide mechanical anchorage devices as described above that accommodate deflection while maintaining the fire resistance rating of the wall assembly.

D. Deflection and Firestop Track: Intumescent strip factory applied to track flanges expands when exposed to heat or flames to provide a perimeter joint seal.

2.03 BOARD MATERIALS

A. Manufacturers, Gypsum Based Board:
   1. American Gypsum Company: www.americangypsum.com.
   2. CertainTeed Corporation: www.certainteed.com.
   3. Georgia-Pacific Gypsum: www.gpgypsum.com.
   4. Gold Bond Building Products, LLC provided by National Gypsum Company: www.goldbondbuilding.com.
   5. USG Corporation: www.usg.com.
   6. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in full accordance with ASTM D3273.
      a. Mold resistant board is required at all locations.
   3. At thoseAssemblies Indicated with Fire Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.

C. Backing Board For Wet Areas: One of the following products:
   1. Application: Surfaces behind tile in wet areas, including tub and shower surrounds and shower ceilings.
   2. Application: Horizontal surfaces behind tile in wet areas including countertops and throughout toilet rooms.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   4. ANSI Cement-Based Board: Non gypsum based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
      a. Thickness: 5/8 inch.

D. Backing Board For Non Wet Areas: Water resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
   1. Application: Vertical surfaces behind thinset tile, except in wet areas.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Type: Regular and Type X, in locations indicated.
   5. Type X Thickness: 5/8 inch.
   6. Regular Board Thickness: 5/8 inch.
   7. Edges: Tapered.

2.04 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed mineral fiber, friction fit type, unfaced; thickness 2 inches.

B. Fire and Sound Attenuating Insulation: Sprayed cellulose fire rated material for cavities in wall assemblies.
   1. Surface Burning Characteristics: Provide assemblies with Class I rating, when tested in accordance with ASTM E84.
   2. Sound Transmission Class (STC): 56, calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
   2. Joint Compound: Setting type, field mixed.

D. Finishing Compound: Surface coat and primer.

E. Screws for Fastening of Gypsum Panel Products to Cold Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self piercing tapping screws, corrosion-resistant.

F. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all Existing Poject Site conditions are appropriate to all Work, this Section, prior to commencing any Work, this Section.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in full accordance with ASTM C1007AISI S220 and Manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.

C. Studs: Space studs as indicated.
   1. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

E. Furring for Fire Resistance Ratings: Install as required for fire resistance ratings indicated and to GA-600 requirements.

F. Blocking: Install mechanically fastened steel sheet blocking for support of:
   1. All framed openings.

2. All wall mounted cabinets.
3. All plumbing fixtures.
4. All toilet partitions.
5. All toilet accessories.
6. All wall mounted door hardware.
7. All other miscellaneous Work, as directed by Architect.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Sound Isolation Tape: Apply to vertical studs and top and bottom tracks, runners in full accordance with Manufacturer's written instructions.

C. Acoustic Sealant: Install in full accordance with Manufacurer's written instructions.

3.04 BOARD INSTALLATION

A. Fully comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Fire Resistance Rated Construction: Install gypsum board in full compliance with requirements of assembly listing.

C. Exposed Gypsum Board in Interior Wet Areas: Seal all joints, cut edges and holes with water resistant sealant.

D. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in full accordance with ANSI A108.11 and Manufacturer's written instructions.

E. Installation on Metal Framing: Use screws for attachment of gypsum board.

3.05 INSTALLATION, TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.06 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 1: Fire resistance rated wall areas, above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.

C. Fill and finish all joints and corners of cementitious backing board as recommended by Manufacturer.

3.07 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch within (6) Six feet, any direction.

3.08 PROTECTION

A. **Protect all Work, this Section from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 30 00
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tiling.

1.02 RELATED REQUIREMENTS

A. Section 07 14 00 - Fluid Applied Waterproofing.

B. Section 07 92 00 - Joint Sealants.

C. Section 07 95 13 - Expansion Joint Cover Assemblies.

D. Section 09 05 61 - Common Work Results for Flooring Preparation.

E. Section 09 21 16 - Gypsum Board Asemblies.

F. Section 09 24 00 - Cement Plastering.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar; 2023.

B. ANSI A108.1b - Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

C. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set, Modified Dry-Set, or Improved Modified Dry-Set Cement Mortar; 2023.

D. ANSI A108.2 - American National Standard General Requirements: Materials, Environmental and Workmanship; 2019.

E. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive; 2023.

F. ANSI A108.5 - Setting of Ceramic Tile with Dry-Set Cement Mortar, Modified Dry-Set Cement Mortar, EGP (Exterior Glue Plywood) Modified Dry-Set Cement Mortar, or Improved Modified Dry-Set Cement Mortar; 2023.

G. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy; 2023.

H. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout; 1999 (Reaffirmed 2024).

I. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout; 2023.

J. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework; 2017 (Reaffirmed 2022).

K. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

L. ANSI A108.12 - Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2023.

M. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone; 2005 (Reaffirmed 2021).

N. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.

O. ANSI A108.20 - American National Standard Specifications for Exterior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs; 2020.

A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium); 2024.

B. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.

C. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

D. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2023.

E. TCNA (HB-GP) - Handbook for Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs Installation; 2025-2026.

F. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2025.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting, (14) Fourteen Calndar Days prior to starting any Work, this Section; require mandatory attendance, all affected Subcontractors.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide Manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

D. Product Samples: Provide (2) Two Product Samples, Manufacturer's standard size, each tile type delineated within Contract Documents, as required to accurately represent construction, color sheen and pattern.

E. Installer's Qualification Statement:
   1. Submit documentation of National Tile Contractors Association (NTCA) or Tile Contractors' Association of America (TCAA) accreditation.
   2. Submit documentation of completion of apprenticeship and certification programs.
   3. Submit documentation of Natural Stone Institute Accreditation.

F. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1.06 QUALITY ASSURANCE

A. Maintain one copy of ANSI A108/A118/A136, TCNA (HB), and TCNA (HB-GP) upon Existing Project Site, at all time.

B. Manufacturer Qualifications: Company specializing in manufacturing types of Products specified, this section, minimum (15) Fifteen years, documented experience.

C. Installer Qualifications: Natural Stone Institute (NSI) Accredited Commercial B Contractor (light commercial): www.naturalstoneinstitute.org/#sle.

D. Installer Qualifications:
   1. Company specializing in performing tile installation, with minimum of five years of documented experience.
      a. Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).
   2. Installer Certification:

a. Ceramic Tile Education Foundation (CTEF): Certified Tile Installer (CTI).

1.07 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Construct mock up as directed by Architect.
   1. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.08 DELIVERY, STORAGE, HANDLING

A. Protect all adhesives from freezing, overheating in full accordance with Manufacturer's written instructions.

1.09 FIELD CONDITIONS

A. **Do not** install any solvent based Products within an unventilated environment.

B. Maintain ambient and substrate temperature, above (60) Sixty degrees Fahrenheit and below (90) Ninety degrees Fahrenheit, during installation and curing of materials.

PART 2 PRODUCTS

2.01 TILE

A. Manufacturers: All Products by same Manufacturer.
   1. Basis of design, those Manufacturers, Products delineated within Contract Documents.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 TRIM, ACCESSORIES

A. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, set with tile mortar or adhesive.
   1. Products:
      a. Schluter Systems: Those Products delineated within Contract Documents.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same Manufacturer.

B. Improved Latex Portland Cement Mortar Bond Coat: ANSI A118.15.
   1. Applications: Use this type of bond coat where Large and Heavy Tile (LHT) mortar is indicated.
   2. Products:
      a. Mapei Corporation; Granirapid System: www.mapei.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 GROUTS

A. Provide setting and grout materials from same Manufacturer.

B. Epoxy Grout: ANSI A118.3 chemical resistant and water cleanable epoxy grout.
   1. Color(s): As selected by Architect from Manufacturer's full range of options.
   2. Products:
      a. Mapei Corporation: www.mapei.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.05 MAINTENANCE MATERIALS

A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
   1. Applications: Between tile and plumbing fixtures.
   2. Color(s): As selected by Architect from Manufacturer's entire range of options.
   3. Products:

a. Mapei Corporation; Mapesil T Plus: www.mapei.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.06 ACCESSORY MATERIALS

A. Waterproofing Membrane: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; fully complying with ANSI A118.10.
1. Fluid or Trowel Applied Type:
a. Material: Synthetic rubber or Acrylic.
b. Thickness: 25 mils, minimum, dry film thickness.
c. Products:
1) Mapei Corporation; Mapelastic AquaDefense: www.mapei.com.
2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 7/16 inch thick; 2 inch wide coated glass fiber tape for joints and corners.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all wall surfaces are smooth, flat within all required tolerances, dust free and are ready to receive Work of this Section.

3.02 PREPARATION

A. **Protect all surrounding Work from any damage.**

B. Thoroughly vacuum clean all surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board Manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

E. Prepare all substrate surfaces for adhesive installation in full accordance with adhesive Manufacturer's written instructions.

3.03 INSTALLATION, GENERAL

A. Install tile, thresholds, and stair treads and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.20, manufacturer's instructions, and TCNA (HB) or TCNA (HB-GP) recommendations, as applicable.

B. Lay tile to pattern indicated. **Do not** interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make all grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install non ceramic trim in full accordance with Manufacturer's instructions.

G. Sound tile after setting. Replace hollow sounding units.

H. Keep all control, expansion joints free of mortar, grout and adhesive.

I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

J. Grout all tile joints unless directed otherwise by Architect.

K. At those changes within plane and tile to tile control joints, use tile sealant in lieu of grout, with either bond breaker tape or backer rod as appropriate to prevent three sided bonding.

3.04 INSTALLATION, WALL TILE

A. On exterior walls install in full accordance with TCNA (HB) Method W244, thin-set over cementitious backer units, with waterproofing membrane.

B. Over cementitious backer units on studs, install in full accordance with TCNA (HB) Method W244, using membrane at toilet rooms.

3.05 CLEANING

A. **Thoroughly clean all Work, this Section.**

3.06 PROTECTION

A. **Do not permit any foot traffic over Work, this Section, minimum (10) Ten calendar days, immediately following completion, all Work, this Section.**

B. **Protect all Work, this Section from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling system.

B. Acoustical units.

1.02 RELATED REQUIREMENTS

A. Section 07 21 00 - Thermal Insulation: Acoustical insulation.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. **Do not** install acoustical units until after interior wet work is completely dry and indoor relative humidity has been stabilized, as required by controlling Mechanical systems.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Shop Drawings: Thoroughly indicate all grid layout, including all related dimensioning, particular to this Project.

C. Product Data: Provide data on suspension system components and acoustical units.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately represent construction, color, pattern and finish.

E. Manufacturer's Installation Instructions: Provide detailed written instructions,including all perimeter conditions, special procedures appropriate to this particular Project..

1.06 QUALITY ASSURANCE

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing those Products specifiedwith in this Section, minimum (20) Twenty years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in Manufacturing those Products specified within this Section, minimum (20) Twenty years documented experience.

1.07 FIELD CONDITIONS

A. Maintain uniform temperature, minimum (65) Sixty Five degrees Fahrenheit, maximum humidity (35) Thirty Five percent prior to, during, and immediately following installtion completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acoustic Tiles/Panels:
   1. Armstrong World Industries, Inc.: www.armstrongceilings.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Suspension Systems:
   1. Armstrong World Industries, Inc.: www.armstrongceilings.com.

2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category applicable and fully complying with the following:
   1. Those Local Authorities having Jurisdiction.

2.03 SUSPENSION SYSTEM(S)

A. Metal Suspension Systems - General: Fully complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
   1. Materials:
      a. Steel Grid: ASTM A653/A653M, G30 coating.
      b. Aluminum Grid: Aluminum sheet, ASTM B209/B209M.

B. Exposed Suspension System: Hot dipped galvanized steel grid with steel cap.
   1. Profile: Tee; 9/16 & 15/16 inch face width in locations as indicated on the drawings.
   2. Finish: Baked enamel.
   3. Color: White.

C. Exposed Suspension System: Aluminum grid and cap; factory-applied closed-cell foam gaskets.
   1. Application(s): As directed by Architect.
   2. Structural Classification: Intermediate-duty, when tested in full accordance with ASTM C635/C635M.
   3. Profile: Tee; 15/16 inch face width.
   4. Finish: Baked enamel.

2.04 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.

C. Perimeter Moldings: Same metal and finish as grid.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Confirm all** existing conditions prior to commencing any Work, this Section.

B. **Verify entire** hangers layout **will not** interfere with any other Work, this particular Project.

3.02 PREPARATION

A. **Install only** after all major above ceiling Scope of Work has previously been completed.

B. **Coordinate final** location of all hangers with other Work, already in place.

C. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.

3.03 INSTALLATION, SUSPENSION SYSTEM

A. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

B. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
   1. Use longest practical lengths.

C. Suspension System, Non Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

D. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.

E. **Do not** support any components, main runners or cross runners, if weight causes total dead load to exceed Manufacturr's deflection capability.

F. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

G. **Do not** eccentrically load any part of system, or induce any rotation of runners.

3.04 INSTALLATION, ACOUSTICAL UNITS

A. Install all acoustical units in full accordance with Manufacturer's wrtten instructions.

B. Fit all acoustical units in place, free from any damage or other defects.

C. Fit all border trim neatly against abutting surfaces.

D. Install all acoustical units level, uniform in plane, and free from any twist, warp or dents.

E. Cutting Acoustical Units:

1. **Ensure all field cut edges, are of identical profile as factory edges.**

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in (6) Six feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: (2) Two degrees.

3.06 CLEANING, PROTECTION

A. Reference Section 01 70 00 - Execution and Closeout Requirements for additional Content.

B. Thoroughly clean all Work, this Section.

C. **Protect all Work, this Section from Damage**.

D. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 65 66
RESILIENT ATHLETIC FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient Athletic Flooring.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in Place Concrete.

B. Section 09 05 61 - Common Work Results for Flooring Preparation.

C. Section 09 65 00 - Resilient Flooring.

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY " ...

A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).

B. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

E. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes; 2019a.

F. ASTM F2772 - Standard Specification for Athletic Performance Properties of Indoor Sports Floor Systems; 2024.

G. CHPS (HPPD) - High Performance Products Database; Current Edition.

H. DIN EN 14904 - Surfaces for Sports Areas – Indoor Surfaces for Multi-Sports Use – Specification; 2006.

I. SCS (CPD) - SCS Certified Products; Current Edition.

J. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Manufacturer's thoroughly detailed written Product Data, particuar to this project.

C. Shop Drawings: Thourougly detailed Shop Drawings including fabrication, installation details, layout, colors, widths of game lines and equipment locations.

D. Samples: (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrate construction, color, pattern and finish. All Colors as selected by Architect from Manufacture's full range of options.

E. Test Reports: Submit test reports showing full compliance with DIN EN 14904.

F. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

G. Manufacturer's Instructions: Provide Manufacturer's written instructions, including those particular to this Project.

H. Installer's qualification statement.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Reference Section 01 60 00 - Product Requirements, for additional Content.
   2. Extra Flooring Material: (75) Seventy Five square yards, each flooring type delineated within Contract Documents.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Work, this Section, minimum (15) Fifteen Years documented experience.

B. Installer Qualifications: Company specializing in performing Work, this Section, minimum (15) Fifteen Years documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections, type delineated within Contract Documents, minimum (10) Ten Years documented experience.

1.06 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Construct (15) Fifteen Foot Square Flooring mock up.

C. Locate as directed by Architect.

D. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.07 DELIVERY, STORAGE, HANDLING

A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.

B. Deliver all materials, this Existing Project Site, within unopened containers, only, clearly labeled with Manufacturer's name, including identification of all contents.

C. Store all materials within dry, clean location until needed for installation. During installation, handle in a manner that will prevent any marring and soiling of any finished surfaces.

1.08 FIELD CONDITIONS

A. Maintain temperature within all spaces, as required to receive installed resilient flooring within range of (75) Seventy Five to (90) Ninety degrees Fahrenheit, for not less than (72) Seventy Two hours prior to beginning of installation and for not less than (48) Forty Eight hours following completion of installation. Subsequently, do not allow temperature withn any installed spaces to drop below (65) Sixty Five degrees Fahrenheit, or increase above (90) Ninety degrees Fahrenheit.

PART 2 PRODUCTS

2.01 FLUID APPLIED ATHLETIC FLOORING

A. Manufactu**rers: All Products by same, (1) O**ne Manufacturer.
   1. Aacer Sports Flooring ; www.aacerflooring.com.
   2. Connor Sports Flooring: www.connorfloor.com.
   3. Robbins Sports Surfaces: www.robbinsfloor.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Homogeneous Polyurethane Flooring System:
   1. Fully comply with testing requirements according to DIN EN 14904 for type application indicated.
   2. Total System Thickness: Minimum 3/8 inch.
   3. Primer: Manufacturer's recommended standard for project substrate.
   4. Resin: Two-component, solid, pigmented, self-leveling polyurethane without fillers, with properties as follows:
      a. Formulation: Mercury catalyzed.
      b. Tensile Strength: Minimum 400 psi, per ASTM D412.
      c. Hardness: 50 to 60, when tested in full accordance with ASTM D2240 using Type A durometer.
      d. Temperature Stability: Unaffected over range of (0) Zero to (120) One Hundred Twenty degrees Fahrenheit.
      e. Ultimate Elongation: Minimum 250 percent, per ASTM D412.

5. Finish Coating: Manufacturer's standard pigmented, two component polyurethane wear layer.
    a. Color: As selected by Architect from Manufactuer's full range of options.
    b. Finish: As selected by Architect from Manufacturer's full range of options.

C. Game Lines: Manufacturer's full line,options, pigmented polyurethane paint.
    1. Colors: As selected by Architect from Manufacturer's full range of options.

2.02 ACCESSORIES

A. Leveling Compound: Latex modified cement formulation as recommended by flooring Manufacturer for those substrate conditions, this particular Project.

B. Flooring Adhesive: Waterproof; types recommended by flooring Manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Thoroughly examine all existing substrates for any conditions detrimental to installation of Work, this Section. Commence installation, only after all unsatisfactory conditions have been corrected.

B. Verify all surfaces are flat, within those tolerances acceptable to flooring Manufacturer, free of any cracks and free of any curing compounds or other chemicals that might interfere with bonding flooring to substrate.

C. Cementitious Subfloor Surfaces: Verify all substrates are ready for Work, this Section, priorto commencing Work, this Section.
    1. Obtain instructions if test results are not within limits recommended by resilient flooring Manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Concrete: Use leveling compound as required to achieve substrate flatness of plus or minus 1/6 inch within (10) Ten Foot radius.

B. Remove all coatings that are incompatible with flooring adhesives, using only those methods recommended by flooring Manufacturer.

3.03 INSTALLATION

A. Commencing installation shall constitute acceptance of all existing subfloor conditions.

B. Install all Work, this Section in full accordance with Manufacturer's written instructions.

3.04 CLEANING

A. Thoroughly clean all Work, this Section.

3.05 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 67 00
FLUID APPLIED FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fluid applied flooring.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants.

B. Section 09 05 61 - Common Work Results for Flooring Preparation:

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"

A. ANSI/ESD STM7.1 - The Protection of Electrostatic Discharge Susceptible Items Flooring Systems Resistive Characterization.

B. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide detailed Product Data describing physical and performance characteristics; sizes, patterns and all colors available, Manufacturer's full range of options.

C. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrate construction, color, pattern and finish.

D. Concrete Subfloor Test Report: Submit a copy of moisture and alkalinity (pH) test reports.

E. Manufacturer's Installation Instructions: Provide Manufacturer's written Installation instructions, including perimeter conditions, application rate and special procedures particular to this Project..

F. Manufacturer's Qualification Statement.

G. Applicator's Qualification Statement.

H. Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.

I. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Reference Section 01 60 00 - Product Requirements, for additional Content.
   2. Extra Top Coat Materials: (5) Five Gallons.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products, this Section, minimum (20) Twenty Years documented experience.

B. Applicator Qualifications: Company specializing in performing Work, this Section, minimum (15) Fifteen Years documented experience.

C. Supervisor Qualifications: Trained by Product Manufacturer, under direct full time supervision of Manufacturer's own Foreman.

1.06 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Construct mock up(s) as required to serve as basis for evaluation of texture, workmanship and General Construction.
   1. Use same materials, methods for use in Work, this Section
   2. Use only previously approved design samples as basis for mock ups.

3. Locate as directed by Architect.
4. Minimum Size: (12) Twelve feet square.

C. Obtain approval of said mock up, via Architect and Owner's Representative, prior to beginning any Work, this Section.

D. **Mock up may not remain as portion of permanent Work, this particular Project.**

1.07 DELIVERY, STORAGE, HANDLING

A. Store all materials, this Section, only within dry, secure areas.

B. Store all materials, this Section, minimum (5) five business days, prior to commencement of Work, this Section.

1.08 FIELD CONDITIONS

A. Maintain minimum temperature of (60) Sixty degrees Fahrenheit, within storage areas.

B. Store all materials within area of installation, minimum period of (48) Forty Eight hours prior to beginning installation.

C. Maintain that ambient temperature, required by Manufacturer, minimum (72) Seventy Two hours prior to, during and (48) Forty Eight hours immediately following installation of Work, this Section.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fluid Applied Flooring:
1. LATICRETE International, Inc.: www.laticrete.com.
2. PPG Flooring: www.ppgpaints.com.
3. Sherwin-Williams Company: www.protective.sherwin-williams.com.
4. Sika Corporation: www.sikafloorusa.com.
5. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 FLUID APPLIED, FLOORING SYSTEMS

A. Manufacturer and Product as delineated within Contract Documents.
1. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Fluid Applied Flooring: Epoxy base coat(s), including broadcast aggregate.
1. Aggregate: Vinyl flakes.
2. Top Coat: Polyurethane, (2) Two coats
3. System Thickness: 1/8 inch, nominal, dry film thickness.
4. Texture: As directed by Architect.
5. Color: As selected by Architect from Manufacturer's full range of options.

2.03 ACCESSORIES

A. Base Caps: Zinc with projecting base of 1/8 inch; color as selected by Architect from Manufacturer's full range of options.

B. Cant Strips: Molded of flooring resin material.

C. Copper Grounding Strips: Type and size as recommended by fluid applied flooring Manufacturer.

D. Subfloor Filler: That type recommended by fluid applied flooring Manufacturer.

E. Primer: That type recommended by fluid applied flooring Manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all subfloor surfaces are smooth, flat and within those tolerances specified for that type Work and ready to receive Work, this Section.

B. Verify all wall surfaces are smooth, flat and within those tolerances specified for that type of Work, dust free, and are ready to receive Work, this Section.

C. Confirm all subfloor surfaces are dust free and free of any substances that might impair bonding of materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify all substrates are ready for fluid applied flooring installation by testing for moisture and alkalinity.
   1. Test in full accordance with Section 09 05 61- Common Work Results for Flooring Preparation.
   2. Obtain additional instructions, if test results are not within limits recommended by fluid applied flooring Manufacturer.
   3. Follow those moisture and alkalinity remediation procedures, Section 09 05 61- Common Work Results for Flooring Preparation.

E. Confirm all floor mounted utilities have been located correctly.

3.02 PREPARATION

A. Remove any subfloor ridges and bumps. Fill all ow spots, cracks, joints, holes, and other defects with subfloor filler.

B. Prepare all concrete surfaces in full accordance with ICRI 310.2R.

C. Apply, trowel, and float filler, as required to achieve smooth, flat, hard surface. Grind irregularities above the surface level. Prohibit traffic until filler is cured.

D. Thoroughly vacuum clean substrate.

E. Apply primer to those surfaces required by flooring Manufacturer.

3.03 INSTALLATION, ACCESSORIES

A. Install cant strips at base of walls where flooring is scheduled to be extended up wall.

B. Install copper grounding strips in full accordance with flooring Manufacturer's instructions. Reference Construction Documents for grounding, bonding to building grounding system.

3.04 INSTALLATION , FLOORING

A. Apply in full accordance with Manufacturer's instructions.

B. Apply each coat to minimum thickness, as required my Manufacturer.

C. Finish to fully level surface.

D. Cove at all vertical surfaces.

3.05 FIELD QUALITY CONTROL

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Test all Work, this Section in full accordance with ANSI/ESD STM7.1 .

3.06 PROTECTION

A. Prohibit any foot traffic upon all Work, this Section, minimum (10) Ten calendar days, immediately following completion of all Work, this Section.

B. **Protect all Work this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 68 13
TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile Carpeting.

1.02 RELATED REQUIREMENTS

A. Section 09 05 61 - Common Work Results for Flooring Preparation.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Admiminstrative Requirements for additional Content.

B. Product Data: Provide detailed Product data, particular to this Project, describing all physical, performance characteristics, sizes, patterns, colors available, and methods of installation.

C. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately represent construction, color and pattern, each tile type selected.

D. Manufacturer's written Installation Instructions: Indicate all special procedures, perimeter conditions, particular to this Project.

E. Operation and Maintenance Data: Include all detailed maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in installing carpet tile with minimum (10) Ten Years documented experience and previously approved by Tile Carpeting Manufacturer.

1.06 FIELD CONDITIONS

PART 2 PRODUCTS

2.01 MATERIALS

A. Tile Carpeting: Tufted, Manufactured within (1) One dye lot.
   1. Product: As delineated within Drawings and Contract Documents.

B. Walk Off Tile Carpeting: Tufted, Manufactured within (1) One color dye lot.

C. 1. Product : Tarkett; Assertive Action, as delineated within Drawings and Contract Documents.

2.02 ACCESSORIES

A. Subfloor Filler: White premix latex type, as recommended by flooring material Manufacturer.

B. Edge Strips: As delineated within Drawings and Contact Documents.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all subfloor surfaces are smooth, flat, within tolerances required and ready to receive Work, this Section.

B. Confirm all subfloor surfaces are dust free and free of any substances that may impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify all substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test in full accordance with Section 09 05 61.
   2. Obtain additional instructions, if test results are not within those limits recommended by flooring material Manufacturer and or adhesive materials Manufacturer.

D. Confirm all floor mounted utilities are in correct location.

3.02 PREPARATION

A. Prepare all floor substrates only as recommended by flooring and adhesive Manufacturers.

B. Remove all subfloor ridges and or bumps. Fill all low spots, cracks, joints, holes and any other defects within subfloor filler.

C. Apply, trowel, and float filler, as required to achieve smooth, flat, hard surface. Prohibit all traffic, until filler is fully cured.

D. Thoroughly vacuum clean entire substrate.

3.03 INSTALLATION

A. Commencement of installation shall constitute acceptance of all subfloor conditions.

B. Install all carpet tile in full accordance with Manufacturer's written instructions.

C. Blend all carpet tile from different cartons, as required to ensure minimal variation within color match.

D. Cut all carpet tile clean. Fit all carpet tile tight to intersection with all vertical surfaces without gaps.

E. Lay all carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Locate change of color or pattern between rooms under door centerlines.

G. Fully adhere all carpet tile.

H. Trim all carpet tile, neatly.

I. Complete installation of all edge strips

3.04 CLEANING, PROTECTION

A. Reference Section 01 70 00 - Execution and Closeout Requirements for additional Content.

B. Remove all excess adhesive, all Work, this Section.

C. Thoroughly clean all Work, this Section.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 09 78 00
INTERIOR WALL PANELING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior Wall Paneling.

1.02 RELATED REQUIREMENTS

A. Section 06 83 16 - Fiberglass Reinforced Paneling.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

D. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

E. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

G. ASTM C393/C393M - Standard Test Method for Core Shear Properties of Sandwich Constructions by Beam Flexure; 2020.

H. ASTM C1036 - Standard Specification for Flat Glass; 2025.

I. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

J. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2024, with Editorial Revision (2025).

K. ASTM C1186 - Standard Specification for Flat Fiber-Cement Sheets; 2022, with Editorial Revision (2023).

L. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2024.

M. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 2022.

N. ASTM D638 - Standard Test Method for Tensile Properties of Plastics; 2022.

O. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials; 2017.

P. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

Q. ASTM D4752 - Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub; 2020 (Reapproved 2024).

R. ASTM D5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels; 2022.

S. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

T. ISO 846 - Plastics - Evaluation of the Action of Microorganisms; 2019.

U. ISO 2812-1 - Paints and Varnishes -- Determination of Resistance to Liquids -- Part 1: Immersion in Liquids Other than Water; 2017.

V. NSF 35 - High Pressure Decorative Laminates for Surfacing Food Service Equipment; 2024.

W. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Submit Manufacturer's thoroughly detailed Product Data, particular to this Project, including anchorage devices, specific to substrate types.

C. Shop Drawings: Provide thoroughly detailed Shop Drawings Submittal, particular to this Project, including dimensioned plans, elevations, joint attachments and details.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrate, construction, anchors, hardware, color finish and sheen.

E. Certificates: Certify all Products, this Section, meet or exceed all requirements, Contract Documents.

F. Manufacturer's Instructions: Provide Manufacturer's written installation instructions.

G. Manufacturer's qualification statement.

H. Installer's qualification statement.

I. Maintenance Data: Include recommended instructions, methods, materials for cleaning all Work, this Section, particular to this Project.

J. Warranty Documentation: Manufacturer warranty; ensure all forms have been completed within Owner's name and registered with Manufacturer.

K. Maintenance Materials: Furnish following to Owner's Representative.
   1. Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Extra Panels: Total quantity equal to (15) Fifteen percent of Work installed.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing products Specified within this Section, minimum (20) Twenty Years documented experience.

B. Installer Qualifications: Company specializing in installing Work of type Specified within this Section, minimum (15) Fifteen Years documented experience.

1.06 MOCK UPS

A. Refernce Sectin 01 40 00 - Quality Requirements for additional Content.

B. Construct a (12) Twelve square foot mock up, each type wall paneling identified within Contract Documents, including joints, hardware an anchoring devices.

C. Locate as directed by Architect.

D. **Mock ups may not remain as portion of permanent Work, this particular Project.**

1.07 DELIVERY, STORAGE, HANDLING

A. Deliver all Poducts to Existing Project Site within Manufacturer's original packaging, marked with Manufacturer's product identification.

B. Store all panels flat, indoors, upon a clean, dry surface. Remove all packaging, allow all panels to acclimate to room temperature, minimum (72) Seventy Two hours, prior to commencing installaion.

C. Packaging Waste Management: Reference Section 01 74 19 - Construction Waste Management and Disposal for additional Content.

1.08 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. **Replace all defective Work, this Section, immediately.**

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Decorative Plastic Wall Paneling:
   1. Marlite,Inc: www.marlite.com.
   2. Nudo Products, Inc.; www.nudo.com.
   3. Panolam Surface Systems: www.panolam.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Polycarbonate Interior Wall Paneling:
   1. Sabic Innovated Plastics US LLC: www.sabic.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Laminated Interior Wall Paneling:
   1. EGGER: www.egger.com.
   2. Formica Corporation: www.formica.com.
   3. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

D. Metal Interior Wall Paneling:
   1. Construction Specialties, Inc.: www.c-sgroup.com.
   2. Formica Corporation: www.formica.com.
   3. MDC Interior Solutions: www.mdcwall.com.
   4. Substitutions: Referene Section 01 60 00 - Product Requirements for additional Content.

E. Composite Interior Wall Paneling:
   1. Nichiha USA, Inc.: www.nichiha.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 REGULATORY REQUIREMENTS

A. Surface Burning Classification: Provide wall paneling assemblies, as required to meet Class A when tested in full accordance with ASTM E84.

2.03 DECORATIVE PLASTIC WALL PANELING

A. Decorative Plastic Wall Paneling
   1. Panel Size: As delneated within Contract Documents.
   2. Panel Thickness: As indicated within Contract Documents
   3. Surface Texture: As selected by Architect from Manufacturer's full range of op
   4. Printed Images: Digitally printed pattern images with Manufacturer's scratch resistant, UV resistant protective coating.
      a. Pattern: As selected by Architect from Manufacturer's full range of options.
      b. Custom Image: As delineated within Contract Documents.
   5. Material: Fiberglass reinforced plastic (FRP), fully complying with ASTM D5319.
      a. Impact Strength: Greater than 6 ft lbf/in, when tested in full accordance with ASTM D256.
      b. Mold Resistance: when tested in full accordance with ASTM D3273.
      c. Chemical Cleanability: Excellent chemical resistance to cleaners and detergents when tested in full accordance with ISO 2812-1.
      d. Biological Resistance: when tested in accordance with ISO 846.
      e. Water Absorption: 0.2 percent, maximum, when tested in full accordance with ASTM D570.
   6. Material: Corrugated polyvinyl chloride (PVC).
      a. Flexural Strength: Greater than 2000 ft lbf/sq in, when tested in full accordance with ASTM C393/C393M.

b. Tensile Strength: Greater than 1300 ft lbf/sq in, when tested in full accordance with ASTM D638.
c. Impact Strength: Greater than 1.57 ft lbf/in, when tested in full accordance with ASTM D256.

7. Material: Corrugated polypropylene.
   a. Impact Resistance: Greater than 1.5 ft lbf/in, when tested in full accordance with ASTM D256.
   b. Flexural Strength: Greater than 2,000 ft lbf/sq in, when tested in full accordance with ASTM D790.
   c. Tensile Strength: Greater than 1,300 ft lbf/sq in, when tested in full accordance with ASTM D790.
8. Material: High impact thermoplastic.
   a. Abrasion Resistance: Hoffman Scratch Test.
   b. Solvent Resistance: (50) double rubs with methyl ethyl ketone (MEK), when tested in full accordance with ASTM D4752.

   Certifications:
   a. NSF 35 certified.
   b. UL (GGG) certified.
9. Panel Manufacturing Tolerances:
   a. Thickness: Plus or minus ten percent.
   b. Width and Length: 1/8 inch variation in panel lengths up to and including 12 feet.
   c. Squareness: Not more than 1/8 inch out of square in any direction.
10. Edges: Square.

B. Accessories:
1. Trim:
   a. Material: Vinyl.
   b. Color/Finish: As selected by Architect from Manufacturer's full range of options.
   c. Divider Bars: Manufacturer's standard, matching and aligning with design pattern.
   d. Inside Corner Trim: Standard angle.
   e. Outside Corner Trim: Standard angle.
   f. Edge Trim: Manufacturer's standard shape.
2. Products:
   a. Eagle Mouldings, Inc.: www.eagle-aluminum.com.
   b. Nudo Products, Inc.: www.nudo.com.
   c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
3. Adhesive: That type as recommended by panel Manufacturer.
4. Sealant: That type as recommended by panel Manufacurer.

2.04 POLYCARBONATE INTERIOR WALL PANELING

A. Polycarbonate Sheet Cladding System:
1. Applications: Wall cladding.
2. Panel Size: As identified within Contract Documents.
3. Thickness: As delineated within Contract Documents.
4. Colors: As selected by Architect from Manufacturr's full range of options.
5. Substrate: As outlined within Contract Documents.

B. Material: Nonchlorinated and nonbrominated, fire resistant, opaque, low gloss polycarbonate/ABS blend material.

C. Accessories:
1. Trim: Manufacturer's standard profiles.
2. Adhesive: As recommended by wall panel Manufacturer.
3. Colors: As selected by Architect from Manufacturer's full range of options.

2.05 LAMINATED INTERIOR WALL PANELING

A. Laminated Wall Panels:
   1. Applications: As indicated within Contract Documents.
   2. Panel Size: As delineated within Contract Documents.
   3. Thickness: As outlined within Contract Documents.
   4. Edges: Square.

B. Materials:
   1. Substrate/Core: Aluminum composite material.
   2. Facing: Aluminum sheet.
      a. Color: As selected by Architect from Manufacturer's full range of options.
   3. Backer: Manufacturer's standard balanced backer sheet.

C. Fabrication: Shop fabricate to greatest extent possible.

D. Accessories:
   1. Adhesive/Joint Filler: Concrete wall adhesive, single component, high solids, modified silane polymer with low VOC content, low odor, and no shrinkage.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify all existing conditions, substrate, prior to commencing any Work, this Section.

B. Confrim all substrate surfaces for adhered items are clean, smooth, ready to receive Work, this Section.
   1. Test painted or wall covering surfaces for adhesion in inconspicuous area, as recommended by Manufacturer.
   2. Fully comply with adhesive Manufacturer's recommendations for remedial measures at locations and application conditions where adhesion test results are unsatisfactory.

C. Start of installation constitutes acceptance of all Existing Project conditions.

3.02 INSTALLATION

A. Install all panels in full accordance with Manufacturer's instructions.

B. Cut, drill holes within all panels, only with carbide tipped saw blades, drill bits, or snips.

C. Apply adhesive to back side of panel using trowel recommended by adhesive Manufacturer.

D. Apply all panels to wall with all vertical joints plumb, all horizontal joints level and pattern aligned with all adjoining panels.

E. Using a roller, apply pressure to panel face, as required to ensure proper adhesion between surfaces.

F. Install all panels with Manufacturer's recommended gaps for panel field and corner joints.

G. Fill channels in trim with sealant before mounting to panel.

H. Install trim with adhesive.

I. Seal all joints at wall base and between panels with approved sealant, as required to prevent any moisture intrusion.

J. Remove all excess sealant after paneling is installed and prior to curing.

3.03 ADJUSTING

A. **Replace all Work, this Section, installed out of plumb and or not aligned with adjacent panels or construction, immediately.**

3.04 CLEANING

A. Reference Section 01 70 00 - Execution and Closeout Requirements for additional Content.

B. Remove all nonpermanent labels, immediately following glazing installation.

C. Thoroughly clean all Work, this Section.

3.05 CLOSEOUT ACTIVITIES

A. Reference Section 01 78 00 - Closout Submittals for additional Content.

3.06 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 09 84 13
SOUND ABSORPTIVE PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sound Absorptive Panels.

1.02 RELATED REQUIREMENTS

A. Section 09 51 00 - Acoustical Ceilings.

B. Section 09 91 23 - Interior Painting.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "

A. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

B. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

C. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

D. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

F. ASTM E795 - Standard Practices for Mounting Test Specimens during Sound Absorption Tests.

G. PS 2 - Performance Standard for Wood Structural Panels.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's thoroughly detailed Product Data, particular to this Project.

C. Shop Drawings: Manufacturer's thoroughly detailed Shop Drawings Submittal, particular to this Project, including dimensioned plans, elevations, panel layouts, orientations and installation details.

D. Samples: (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrate, construction, edge condition, thickness, color and finish

E. Test Reports: Certified Test Data via independent Testing Agency confirming all panels meet or exceed those requirements outlined within Contract Documents.

F. Maintenance Materials: Furnish following to Owner's Representative;
   1. Reference Section 01 60 00 - Product Requirements for additional Content.
   2. Extra Panels: Quantity equal to (15) percent of total Work, in place, but not less than (1) One Panel each type.

1.05 DELIVERY, STORAGE, HANDLING

A. Protect all Products from any type Damage, during shipment, storage, handling. Deliver unto Existing Project Site within factory wrapped bundles; do not open any bundles until Products are ready for installation.

B. Store all Products, this Section, only within fully dry, well ventilated space, do not stand on end.

C. Protect all edges from any Damage.

1.06 MOCK UPS

A. Reference Section 01 40 00 - Quality Requirements for additional Content.

B. Construct mock as directed by Architect.
   1. Minimum mockup dimensions; 96inches square.
   2. **Mock ups may not remain as portion of permanent Work, this particular Project.**

PART 2 PRODUCTS

2.01 SOUND ABSORPTIVE PANELS

A. Manufacturers:
   1. Troy Acoustics Corporation; www.troyacoustics.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. System Description: Prefabricated, sound absorptive fiber cement panels, including acoustic insulation for those applications delineated within Contract Documents.

2.02 COMPONENTS

A. Sound Absorptive Panels:
   1. Product: Troy Acoustics Corporation; Troy Board: www.troyacoustics.com.
   2. Panel Composition: Manufacturer's standard panel composition.
   3. Surface Burning Characteristics: Flame spread index of (0) zero, including smoke developed index of (0) zero, when tested in full accordance with ASTM E84.
   4. Noise Reduction Coefficient (NRC): 0.70 to 0.80 when tested in full accordance with ASTM C423, per ASTM E795.
   5. Panel Size: As indicated within Contract Documents.
   6. Panel Thickness: 1 inch.
      a. Panel Weight: 2.5 lb/sq ft.
   7. Edges: Square.
   8. Color: As selected by Architect from Manufacturer's full range of options.
   9. Mounting Method: Face mounted with mechanical fasteners to metal Z Channels.

B. Acoustic Insulation:
   1. Product: Troy Acoustics Corporation; Troy Wool; www.troyacoustics.com.

2.03 ACCESSORIES

A. Fasteners: Manufacturer's standard, sized appropriately for weight of panel.

B. Metal Z Furring Members: Minimum depth of 1-1/2 inches.

C. Panel Adhesives: Acceptable to sound absorptive panel Manufacturer, those applications particular to this Project.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine all substrates for any conditions detrimental to installation. Proceed with installation only after any unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install sound absorptive panels, those locations as delineated within Contract Documents, while in full accordance with Manufacturer’s written installation instructions.

B. Align all panels accurately, all edges plumb and level. Scribe as required to fit accurately about all adjoining work, penetrations.

C. Attach ceiling baffles, those locations, heights as indicated within Contract Documents.

D. Install all acoustical panels to construction tolerances of plus or minus 1/16 inch, following:
   1. Plumb and level.
   2. Flatness.
   3. Width of joints.

3.03 CLEANING

A. Thoroughly clean all Work, this Section.

3.04 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 09 91 13
EXTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Non metallic roofing and flashing.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Ceramic and other types of tiles.
   9. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
   10. Exterior insulation and finish system (EIFS).
   11. Glass.
   12. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting.

1.03 DEFINITIONS

A. Comply with ASTM D16 for interpretation of terms used in this section.

1.04 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2024.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.05 SUBMITTALS

A. Referemce Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

C. Samples: Provide (3) Three paper "draw down" samples, Manufacturer's standard size, as required to accurately represent construction, color and sheen.
   1. Where sheen is specified, submit samples in only that sheen.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Reference Section 01 60 00 - Product Requirements, for additional Content.
   2. Extra Paint and Finish Materials: (5) Five Gallons, each color used, from same Product run, store as directed by Owner's Representative
   3. Clearly label each container with Manufacturer's standard label and Color.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing those Products specified, minimum (15) Fifteen years documented experience.

1.07 DELIVERY, STORAGE, HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store within minimum ambient temperature of (60) Sixty degrees Fahrenheit and a maximum of (80) Eighty degrees Fahrenheit, within well ventilated area, and as required by Manufacturer's written instructions.

1.08 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product Manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. **Do not** apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: (50) Fifty degrees Fahrenheit for exterior; unless required otherwise by Manufacturer's written instructions.

E. Provide lighting level of (80) Eighty Foot Candles, measured mid height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Provide paints and finishes from the same Manufacturer to the greatest extent possible.
   1. Substitution of MPI-approved products by a different Manufacturer is preferred over substitution of unapproved products by the same manufacturer.

C. Paints:
   1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com.

D. Primer Sealers: Same Manufacturer as top coats.

E. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PAINTS, FINISHES, GENERAL

A. Paints and Finishes: Ready mixed, unless required to be a field catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. Supply each paint material in quantity required to complete entire project's work from a single production run.

4. **Do not** reduce, thin, or dilute any paint, finishes or add materials, unless such procedure is described explicitly within Manufacturer's written Product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Fully comply with all applicable codes, surface burning characteristics.

D. Manufacturer and products: As identified within Contract Documents.
   1. Substitutions: Reference Section 01 60 00-Product Requirements for additional Content.

E. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

F. Colors: As indicated in Color Schedule.

2.03 PAINT SYSTEMS, EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including primed metal.
   1. Top Coat(s): Exterior Latex.
      a. Products:
         1) Sherwin-Williams Loxon XP Exterior. (MPI #10)
         2) Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 PRIMERS

A. Provide primers recommended by the Manufacturer for each substrate and finish coat combination.

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin any application of paints or finishes, until all substrates have been properly prepared.

B. Condiem LL Aurfaces are ready to receive Work as instructed by the product Manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Test shop applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

A. Thoroughly clean all surfaces, remove any defects prior to application.

B. Prepare all surfaces using only those methods recommended by Manufacturer for achieving the best result for the substrate under these particular Existing Project Site onditions.

C. Remove or mask all surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing any surfaces for finishing.

D. Seal all surfaces that might cause bleed through or staining of topcoat.

E. Remove any mildew from impervious surfaces, by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

3.03 APPLICATION

A. Apply all Products in full accordance with Manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. **Do not** apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect any waste materials that could constitute fire hazard, place in closed, lockable metal containers and remove daily from Existing Projet Site.

3.05 PROTECTION

A. **Protect all Work this Section, from Damage.**

B. **Replace all Damaged Work this Section, immediately.**

END OF SECTION

SECTION 09 91 23
INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Materials for backpriming woodwork.

D. Scope: Finish interior surfaces exposed to view, unless fully factory finished and unless otherwise indicated.
   1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
   2. Prime surfaces to receive wall coverings.
   3. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
      b. In finished areas, paint shop-primed items.

E. **Do Not** Paint or Finish the Following Items:
   1. Items factory finished unless otherwise indicated; materials and products having factory applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne coated stainless steel and lead items.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Ceramic and other tiles.
   9. Brick, architectural concrete, cast stone, integrally colored plaster, and stucco.
   10. Glass.
   11. Concrete masonry units in utility, mechanical, and electrical spaces.
   12. Acoustical materials, unless specifically indicated.
   13. Concealed pipes, ducts, and conduits.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020.

C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

E. SSPC-SP 2 - Hand Tool Cleaning; 2024.

F. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements, for additional Content.

B. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
2. MPI product number (e.g., MPI #47).
3. Cross reference to specified paint system products to be used in project; include description of each system.

C. Samples: Provide (3) Three paper "draw down" samples, Manufacturer's standard size, as rquired to accurately illustrate construction, color, mil. thickness and sheen.
1. Where sheen is specified, submit samples in only that sheen.
2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.
3. Allow 30 days for approval process, after receipt of complete samples by Architect.
4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.

D. Manufacturer's Instructions: Indicate any special procedures, particular to this Project.

E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Reference Section 01 60 00 - Product Requirements, for additional Content.
2. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
3. Label each container with color in addition to the Manufacturer's label.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing Products specified, with minimum(15) Fifteen years documented experience.

1.05 DELIVERY, STORAGE, HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of (60) Sixty degreees Fahrenheit and a maximum of (80) Eighty degrees Fahrenheit, within well ventilated area, and as required by Manufacturer's written instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product Manufacturer.

B. Follow Mnufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Provide lighting level of 80 fc measured mid height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same Manufacturer.
1. If a single Manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
2. Substitution of other Products by the same Manufacturer is preferred over substitution of Products by a different Manufacturer.

B. Paints:
   1. Base Manufacturer: Sherwin-Williams Company: www.sherwin-williams.com..
   2. Benjamine Morre & Co.: www.benjaminemoore.com
   3. Pittsburgh Paints: www.ppgpaints.com.

C. Primer Sealers: Same Manufacturer as top coats.

D. Substitutions: Referene Section 01 60 00 - Product Requirements for additional Content.

2.02 PAINTS, FINISHES, GENERAL

A. Paints and Finishes: Ready mixed, unless intended to be a field catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by Manufacturer based on testing and field experience.
   3. Supply each paint material in quantity required to complete entire project's work from a single production run.
   4. **Do not** reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D-National Volatile Organic Compound Emission Standards for Architectural Coatings.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Manufacturer and products: As incidicated on the drawings.
   1. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

E. Sheens: Provide sheens specified; where sheen is not specified, sheen will be selected later by Architect from Manufacturer's full range of options.

F. Colors: As selected by Architect from Manufacturer's full range of options.
   1. In finished areas, finish pipes, ducts, conduit and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PRIMERS

A. Provide all primers, as recommended by said Manufacturer, for each substrate and finish coat combination, this particular Project

B. Primers: Provide the following unless other primer is required or recommended by Manufacturer of top coats.
   1. Alkali Resistant Water Based Primer; MPI #3.
      a. Products:
         1) Sherwin-Williams Loxon Water Blocking Primer, Finish.
   2. Interior/Exterior Latex Block Filler; MPI #4.
      a. Products:
         1) Sherwin-Williams Loxon Block Surfacer. (MPI #4)
   3. Stain Blocking Primer; MPI #136.
      a. Products:
         1) Sherwin-Williams Extreme Block Stain Blocking Primer. (MPI #136)

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Do not** begin application of paints, finishes until all relatedsubstrates have been adequately prepared.

B. **Verify all** surfaces are ready to receive Work, this Section, as instructed, in writing by Product Manufacturer.

C. **Examine all** surfaces scheduled to be finished, prior to commencement of any Work, this Section. Report any conditions that may potentially affect proper application.

D. **Test all shop** applied primer for compatibility with subsequent cover materials.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Masonry, Concrete, and Concrete Masonry Units: (10) Ten percent.
   2. Interior Wood: (10) Ten percent, measured in full accordance with ASTM D4442.
   3. Concrete Floors and Traffic Surfaces: (8) Eight percent.

3.02 PREPARATION

A. Thoroughly clean all surfaces, as required to correct any defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Replace any existing paints or finishes that exhibit surface defects.

D. Remove all surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Remove all mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to fully dry.

G. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
   2. Prepare surface according to SSPC-SP 2.

H. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 Commercial Blast Cleaning. Protect from corrosion until coated.

I. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

C. **Do not** apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect any waste material that could constitute a fire hazard, place in lockable closed metal containers and remove daily from Existing Project Site.

3.05 PROTECTION.

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 10 14 19
DIMENSIONAL LETTER SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Dimensional Letter Signage.

1.02 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY "

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.

B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

E. UL 879 - Electric Sign Components; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's thoroughly detailed Product literature, each type of dimensional letter sign, indicating style, font, colors, locations, and overall dimensions of same.

C. Shop Drawings:
   1. Thoroughly detailed Shop Drawings including dimensions, locations, elevation, details, materials text, attachement and graphic layouts, particular to this Project.
   2. Indicate locations of all electrical service connections.
   3. Include diagrams for power, signal, and control wiring.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, each type signage, as required to accurately illustrate construction, style, font, attachment method, color and finish.

E. Manufacturer's Installation Instructions: Include written instructions, installation templates, attachment devices.

F. Manufacturer's qualification statement.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing Work, this Section, minimum (15) Fifteen Years documented experience.

1.05 DELIVERY, STORAGE, HANDLING

A. Package all dimensional letter signage, as required to prevent any damage.

B. Store under cover and elevated above grade.

C. Store tape adhesive, only within room temperatures ranging from between (70) Seventy to (80) Eighty degrees Fahrenheit.

1.06 FIELD CONDITIONS

A. **Do not** install tape adhesive when ambient temperature is lower than that recommended by Manufacturer.

B. Maintain minimum ambient temperature prior to, during and following installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Dimensional Letter Signs:
   1. A.R.K. Ramoswww.arkramos.com.
   2. CityScapes Inc.: www.cityscapesinc.com.

3. FASTSIGNS International, Inc.: www.fastsigns.com.
4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 REGULATORY REQUIREMENTS

A. Accessibility Requirements: Fully comply with all ADA Standards and ICC A117.1 and applicable building codes, in the event of conflicting requirements, comply onlywith most restrictive requirements.

2.03 DIMENSIONAL LETTERS

A. Applications:
1. Mounting Location: As delineated within Contract Documents.

B. Metal Letters:
1. Material: Stainless Steel.
2. Thickness: As directed by Architect.
3. Letter Height: As delineated within Contract Documents.
4. Text and Typeface:
a. Character Font: As directed by Architect.
b. Character Case: As delineated witin Contract Documents.
5. Finish: As selected by Architect from Manufacturer's full range of options.
6. Color: As selected by Architect from Manufacturer's full range of options.
7. Mounting: Projected mount with collars.
8. Illumination System: Halo-lit reverse channel letters.
a. Provide products that are listed and labeled as complying with UL 879, where applicable.
b. Power: As delinated within Contract Documents.
9. Products:
a. A.R.K. Ramos; Metal Letters: www.arkramos.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 ACCESSORIES

A. Concealed Screws: Stainless Steel, only

B. Exposed Screws: Stainless Steel, only.

C. Tape Adhesive: Double sided tape, permanent adhesive.

D. Electrical Components and Devices: Listed and labeled as defined in NFPA 70 by a qualified testing agency.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** substrate surfaces are ready to receive Work, this Section, prior to commencing any Work, this Section.

B. **Confirm** electrical service is correctly sized, located, as required to accommodate all Work, this Section.

3.02 INSTALLATION, PROTECTION

A. Install all Work, this Section in full accordance with Manufacturer's instructions.

B. Install all Work, this Section with all horizontal edges plumb and level.

C. Locate all Work, this Section, mount at those heights indicated within Contract Documents and in full accordance with all ADA Standards and ICC A117.1.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 10 14 23
PANEL SIGNAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Panel Signage.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A475 - Standard Specification for Metallic-Coated Steel Wire Strand; 2022.

C. ASTM A555/A555M - Standard Specification for General Requirements for Stainless Steel Wire and Wire Rods; 2023.

D. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

I. UL 879 - Electric Sign Components; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Submit Manufacturer's thoroughly Product Data,particular to this Project, including product literature, each type sign, indicating styles, font, foreground, background colors, locations, and overall dimensions.

C. Shop Drawings Submittal:
   1. Include dimensions, locations, elevations, materials, text and graphic layout, attachment details, and schedules.
   2. Show locations of electrical service connections.
   3. Include diagrams, power, signal, and control wiring.
   4. Schedule: Provide information sufficient to completely define each panel sign for fabrication, including room number, room name, other text to be applied, sign, letter sizes, fonts, and colors.
      a. When room numbers to appear on signs differ from those on drawings, include the drawing room number on schedule.
      b. When content of signs is indicated to be determined later, request such information from Owner through Architect at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
      c. Submit for approval by Owner through Architect prior to any fabrication.

D. Samples: Provide (2) Two Product Samples, each type sign, Manufacturer's standard size, as required to accurately illustrate construction, style, font,color, finish and method of attachment.

E. Manufacturer's written Installation Instructions.

F. Manufacturer's qualification statement.

G. Maintenance Materials: Furnish following to Owner's Representative;
   1. Reference Section 01 60 00 - Product Requirements for additional Content.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products Specified within this Section, minimum (20) Twenty Years documented experience.

1.05 DELIVERY, STORAGE, HANDLING

A. Package all Work, ths Section, as required to prevent any Damage to same.

B. Package all room, door signage in sequential order of installation, labeled by floor, building.

C. Store under cover and elevated above grade.

D. Store all tape adhesive at normal room temperature.

1.06 FIELD CONDITIONS

A. Do not install tape adhesive when ambient temperature is lower than that recommended by Manufacturer.

B. Maintain minimum ambient temperature before, during and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Panel Signage:
   1. Inpro Corporation ; www.inprocorp.com/#sle.
   2. Mohawk Sign Systems, Inc.; www.mohawksign.com/#sle.
   3. Takeform; www.takeform.net/#sle.
   4. Vista System LLC.; www.vistasystem.com/#sle.
   5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 REGULATORY REQUIREMENTS

A. Accessibility Requirements: Comply with ADA Standards and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most restrictive requirements.

2.03 SIGNAGE APPLICATIONS

A. Room, Door Signage:
   1. Office Doors: Identify with room names and numbers to be determined later, not those indicated on drawings; provide "window" section for replaceable occupant name.
   2. Conference and Meeting Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings; provide "window" section with sliding "In Use/Vacant" indicator.
   3. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on drawings.
   4. Rest Rooms: Identify with pictograms, names "MEN" and "WOMEN", room numbers to be determined later, and braille.

B. Interior Directional and Informational Panel Signs:
   1. Directories: For customer produced media; provide divider strips.
   2. Where suspended, ceiling mounted, or projecting from wall signs are indicated, provide two sided signs with same information on both sides.

C. Emergency Evacuation Map Panel Signs:
   1. Allow for one map per lobby.
   2. Map content provided by Owner.

D. Recognition/Donor Panels:
   1. Individual name signs attached with magnetic tape to fixed panel.
   2. Dimensions and number of name signs: As indicated within Contract Documents.
   3. Provide all name signs whether engraved or not, for uniform overall appearance.

E. Traffic Signs: To match campus standards; locate as directed by Architect.

2.04 ACCESSORIES

A. Cable Display Systems: Sizes, configurations as outlined within Contract Documents.
   1. Manufacturers:
      a. Arakawa Hanging Systems; www.arakawagrip.com
      b. Nova Display Systems, Inc; www.novadisplay.com.
      c. Substitutions: Reference Section 01 0 00 - Product Requirements for additional Content.

B. Concealed Screws: Noncorroding stainless steel.

C. Exposed Screws: Noncorroding stainless steel.

D. Tape Adhesive: Double sided tape, permanent adhesive.

E. Electrical Components, Devices: Listed, labeled as defined in NFPA 70 by qualified testing agency.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all substrate surfaces are ready to receive Work, this Section.

B. Confirm all power, data services are correctly sized, located, as required to accommodate Panel Signage Work.

C. Notify Architect if any conditions are not suitable for Work, this Section. Do not proceed with any Work, this Section, until all conditions are satisfacory.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, immediately.**

3.02 INSTALLATION

A. Install all Work, this Section, in full accordance with Manufacturer's written instructions.

B. Install all Work, this Section, with horizontal edges level, vertical edges plumb.

C. Locate all Work this Section, mount at those heights indicated within Contract Documents, while in full accordance with ADA Standards and ICC A117.1.

END OF SECTION

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SECTION 10 21 13.13
METAL TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal Toilet Compartments.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications

B. Section 06 10 53 - Miscellaneous Rough Carpentry

C. Sectio 10 28 00 - Toilete, Bath and Laundry Accessories

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY "

A. ASTM A424/A424M - Standard Specification for Steel, Sheet, for Porcelain Enameling; 2025.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate all Work, this Sectio with placement of support framing, anchors within all walls,ceilings.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Shop Drawings: Provide thoroughly detailed Shop Drawings Submittals, particular to this Project, including dimensioned partition plan, elevation views, details support and door swings.

C. Product Data: Provide thoroughly detailed Product Data, particular to this Project, including panel construction, hardware, and accessories.

D. Samples: Submit (2) Two Product Samples, Manufacurer's standard size as required to accurately illustrated construction, panel finish, color and sheen.

E. Manufacturer's Installation Instructions: Provide throroughly detailed installation instructions, particular to this Project, including any special procedures required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Toilet Compartments:
   1. ASI Accurate Partitions: www.asi-accuratepartitions.com.
   2. Metpar Corp.: www.metpar.com.
   3. Monarch Toilet Partition Inc.: www.monarchpartition.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 MATERIALS

A. Steel Sheet: Hot dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

B. Stainless Steel Sheet: ASTM A666/A666M, Type 304.

2.03 COMPONENTS

A. Toilet Compartments: Powder coated, floor mounted, overhead braced.

B. Doors, Panels,Pilasters: Sheet steel faces, pressure bonded to sound deadening core, mitered corners with corner clips, welded and ground smooth.
   1. Panel Faces: (20) gauge.
   2. Door Faces: (20) gauge.
   3. Pilaster Faces: (20) gauge.

4. Reinforcement: (10) gauge.
5. Internal Reinforcement: Provide within areas of all attached hardware, fittings. Mark all locations of reinforcement for partition mounted washroom accessories.

C. Door, Panel Dimensions:
1. Thickness: (1) One inch.
2. Door Width: (26) Twenty Six inches.
3. Door Width for Handicapped Use: (36) Thirty Six inches.
4. Height: (66) Sixty Six inches. 63-1/2 inches.

D. Pilasters: (1) One inch thick by those sizes required to suit compartment width, spacing.

E. Urinal Screens: Wall mounted, including (3) Three panel brackets, and floor to ceiling vertical upright consisting of pilaster anchored to floor and ceiling.

F. Urinal Screen Splash Panels: Stainless steel sheet 30 inch wide by 42 inch high mounted on partitions adjacent to urinals. Fasten with stainless steel screws spaced (6) Six inches on center.

2.04 ACCESSORIES

A. Pilaster Shoes: Formed ASTM A666 Type 304 stainless steel with No.4 finish, 3 inches high, concealing floor fastenings.
1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
2. Provide ceiling attachment using two adjustable hanging studs, attached to above-ceiling framing.

B. Head Rails: Hollow anodized aluminum tube, 1 by 1-5/8 inches in size, with anti-grip strips and cast socket wall brackets.

C. Brackets: Polished chrome-plated non-ferrous cast metal.

D. Attachments, Screws, and Bolts: Chrome-plated steel, tamper-proof type.
1. For attaching panels and pilasters to brackets: Through bolts and nuts ; tamper proof.

E. Hardware: Polished chrome plated non-ferrous cast metal:
1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
2. Nylon bearings.
3. Thumb turn or sliding door latch with exterior emergency access feature.
4. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
5. Coat hook with rubber bumper; one per compartment, mounted upon door.
6. Provide door pull for outswinging doors.

2.05 FINISHING

A. Color: As selected by Architect from Manufacturer's full range of options.

B. Stainless Steel Compartments: No. 4 finish.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all existing conditions before starting any Work, this Section

B. Confirm all field measurements are correct and accurate.

C. Verify correct spacing of and between plumbing fixtures.

D. Confirm correct location of all built in framing, anchorage and bracing.

E. **Protect all Work, this Section, from Damage.**

F. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install all partitions secure, rigid, plumb, level in full accordance with Manufacturer's instructions.

B. Maintain 3/8 to 1/2 inch space between all walls and panels and between all walls and end pilasters.

C. Attach all panel brackets securely to walls using anchor devices.

D. Attach all panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

E. Replace all damaged, scratched materials.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch.

B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING

A. Adjust and align all hardware, as required to provide uniform clearance at enrtire vertical edge of doors, not exceeding 3/16 inch.

B. Adjust all hinges, as required to position doors within partial open position , when unlatched. Return all out swinging doors to closed position.

C. Adjust adjacent components for consistency of line or plane.

END OF SECTION

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SECTION 10 21 13.17
PHENOLIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Phenolic Toilet Compartments.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"

A. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate all Work, this Section with placement, location of support framing, anchors within walls, ceilings, this particular Project.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide thoroughly detailed Product Data, including panel construction, hardware and accessories, particular to this Project.

C. Shop Drawings: Submit thoroughly detailed Shop Drawings, including plan, elevations, dimensions, supports, door swings and details, particular to this Project.

D. Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrating construction, color, pattern sheen and finish, particular to this Project.

E. Manufacturer's Installation Instructions: Provide thoroughly detailed written instructions, including all special procedures, particular to this Project.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Phenolic Toilet Compartments:
   1. ASI Accurate Partitions: www.asi-accuratepartitions.com.
   2. ASI Global Partitions: www.asi-globalpartitions.com.
   3. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PHENOLIC TOILET COMPARTMENTS

A. Toilet Compartments: Factory fabricated doors, pilasters and divider panels made of solid phenolic core panels with integral melamine finish.
   1. Color: As selected by Architect from Manufacturer's full range of options.

B. Doors:
   1. Thickness: 3/4 inch.
   2. Width, Standard Use: 28 inches.
   3. Width, Handicapped Use: 36 inches.
   4. Height: 60 inch.

C. Panels:
   1. Thickness: 3/4 inch.
   2. Height: 60 inch.
   3. Depth: As delineated within Contract Documents.

D. Pilasters:
   1. Thickness: 3/4 inch.
   2. Width: As delineated wtihin Contract Documents, minimum 4 inch.

E. Screens: 3/4 inch, as required to match compartments, wall mounted,minimum (3) three brackets per panel, including vertical support bracing, as required to match compartments.

2.03 ACCESSORIES

A. Pilaster Shoes: Formed ASTM A666, type 304 stainless steel, number (4) four finish, (4) four inch high, while fully concealing all floor fastenings.
   1. Provide adjustment for all floor variation, including screw jack through stainless steel saddles, integral within pilaster structure.

B. Head Rails: Hollow stainless steel, (1) one inch by (2) two inch, including anti grip profile and cast socket wall brackets.

C. Attachments, Screws, Bolts: Stainless steel, tamper proof type.
   1. For attaching panels, pilasters to brackets: Stainless steel through bolts including nuts, tamper proof type.

D. Hardware: Polished Stainless steel, only;
   1. Pivot hinges, gravity type, adjustable, as required for door close positioning; (3) three per door opening.
   2. Nylon bearings.
   3. Door Latch: Stainless steel slide type, including emergency access feature.
   4. Stainless steel door strike, keeper, including rubber bumper; mounted upon pilaster, in alignment with door latch.
   5. Stainless steel Coat Hook, including rubber bumper; one per compartment, mounting location as directed by Architect.
   6. Provide (1) one stainless steel door pull, each outswinging door.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all previously provided measurements are true, accurate.

B. Confirm all spacing between plumbing fixtures is true, accurate.

C. Verify all locations, built in framing, anchorage, bracing are true, accurate.

D. **Protect all Work, this Section, from Damage.**

E. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install all partitions secure, rigid, plumb and level, in full accordance with Manufacturer's written instructions.

B. Maintain maximum 3/8" air space between all walls, panels and between all walls, end pilasters.

C. Attach all panel brackets securely, using only Manufacturer's recommended anchor devices.

D. Attach all panels, pilasters to brackets. Locate all head rail joints, only at pilaster centerlines.

E. **Damaged finishes will not be permitted. Replace all Damaged Work, this Section, immediately.**

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/8 inch.

B. Maximum Variation From Plumb: 1/8 inch. 1/8 inch.

3.04 ADJUSTING

A. Adjust, align all hardware, as required to provide uniform clearance at vertical edge, all doors, not exceeding 3/16 inch.

B. Adjust all hinges, as required to position doors within partial open position, when unlatched. Return all out swinging doors to closed position.

C. Adjust all adjacent components, as required for consistency of line, plane.

END OF SECTION

SECTION 10 26 01
WALL PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall Protection.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.

1.03 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.

C. Samples: Provide (2) Two Product Samples, Manufacturer's standard size, as required to accurately illustrate construction, color pattern and finish

D. Warranty Documentation: Submit detailed Manufacturer's Warranty, particular to this Project, ensure all forms have been completed within Owner's name and registered with said Manufacturer.

E. Maintenance Data: Manufacturer's instructions for care and cleaning of each type of product. Include information about both recommended and potentially detrimental cleaning materials and methods.

1.04 DELIVERY, STORAGE, HANDLING

A. Deliver all Products within Manufacturer's original, undamaged protective packaging. Label all Products, as required to designate scheduled installation locations.

B. **Do not** deliver any Products to Existing Project site until all areas for storage and installation are fully enclosed, and interior temperatures, humidity are in full compliance with Manufacturer's written recommendations.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Corner Guards:
   1. As outlined within Contract Documents.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 PRODUCT TYPES

A. Corner Guards - Surface Mounted:
   1. Material: Polyethylene terephthalate (PET or PETG); PVC free with full height extruded aluminum retainer.
   2. Performance: Resist lateral impact force of (150) one hundred fifty pounds, at any point ,without damage.
   3. Surface Burning Characteristics: Provide only those assemblies with flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
   4. Width of Wings: (3) three inches.
   5. Corner: Square.
   6. Color: As selecte by Architect from Manufacturer's full range of options.
   7. Length: (1) One piece.

2.03 FABRICATION

A. Fabricate all components, only with tight joints, corners and seams.

B. Form end trim closure by capping and finishing smooth.

PART 3 EXECUTION

3.01 EXAMINATION

A. Confirm all rough openings, blocking and anchors are correctly sized and located.

B. Verify all substrate surfaces are clean, smooth and ready ot receive Work, this Section.
   1. Test all surfaces for adhesion in inconspicuous area, as recommended by Manufacturer. Follow adhesive Manufacturer's recommendations for remedial measures at locations and or application conditions, where adhesion test's results are unsatisfactory.

C. Start of installation constitutes acceptance of existing Project conditions.

3.02 INSTALLATION

A. Install all components in full accordance with Manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.

3.03 TOLERANCES

A. Maximum Variation From Required Height: 1/8 inch.

B. Maximum Variation From Level or Plane For Visible Length: 1/16 inch.

3.04 CLEANING, PROTECTION

A. Reference Section 01 74 19 - Construction Waste Management and Disposal for additional Content.

B. Thoroughly clean all Work, this Section.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

SECTION 10 28 00
TOILET, BATH AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Toilet, Bath and Laundry Accessories.

1.02 RELATED REQUIREMENTS

A. Section 09 30 00 -Tiling.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"...

A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc Iron Alloy Coated (Galvannealed) by the Hot Dip Process.

C. ASTM A666/A666M - Standard Specification for Annealed or Cold Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

D. ASTM B86 - Standard Specification for Zinc and Zinc Aluminum (ZA) Alloy Foundry and Die Castings.

E. ASTM C1036 - Standard Specification for Flat Glass.

F. ASTM C1048 - Standard Specification for Heat Strengthened and Fully Tempered Flat Glass.

G. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror.

H. ASTM D4802 - Standard Specification for Poly(Methyl Methacrylate) Acrylic Plastic Sheet.

I. ASTM D5047 - Standard Specification for Polyethylene Terephthalate Film and Sheeting.

J. ASTM F2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate all Work with placement of internal partition reinforcement, toilet partitions systems reinforcement, as required to adequately receive and anchor all necessary attachment devices.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Submit thoroughly detailed Product Date, particular to this Project, including describing size, finish, details, function, and anchorage methods, all Work, this Section.

C. Manufacturer's written Installation Instructions: Provide thoroughly detailed direction, particular to this Project, including all special conditions, procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:
   1. Basis of Design: Those Products indicated within Contract Documents.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 MATERIALS

A. Accessories, General: Shop assembled, free of dents and scratches and packaged complete with anchors, fittings, steel anchor plates, adapters, and all anchor components, as required for complete installation.
   1. Grind all welded joints smooth.
   2. Fabricate any units made of sheet stainless steel, as required to produce only seamless sheets including flat surfaces.

B. Keys: Provide Owner's Representative with (3) Three keys, each accessory and (2) Two Master keys, each accessory.

C. Stainless Steel Sheet: ASTM A666/A666M, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Galvanized Sheet Steel: Hot dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

F. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.

G. Adhesive: (2) Two component, waterproof, epoxy type.

H. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper proof, security type.

I. Expansion Shields: Fiber, lead, or rubber as recommended by accessory Manufacturer for component, substrate as required, this particular Project.

2.03 FINISHES

A. Stainless Steel: Satin Finish.

B. **Back paint all components**, where contact is made with any building finishes, as required to prevent electrolysis.

2.04 DIAPER CHANGING STATIONS

A. Diaper Changing Station: Wall mounted folding diaper changing station, meeting or exceeding ASTM F2285.
   1. Material: Polyethylene.
   2. Mounting: Reference Contract Documents for additional Content.
   3. Color: As selected by Architect from Manufacturer's full range of options.
   4. Minimum Rated Load: (300) Three Hundred pounds.
   5. Products:
      a. Foundations Worldwide, Inc.; www.foundations.com.
      b. Rubbermaid Commercial Products; www.rubbermaidcommercial.com.
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.05 UTILITY ROOM ACCESSORIES

A. Mop and Broom Holder: stainless steel, Type 304, hat shaped channel.
   1. Holders: (5) Five spring loaded rubber cam holders.
   2. Length: (42) Forty Two inches.
   3. Products:
      a. American Specialties, Inc.; www.americanspecialties.com.
      b. Rubbermaid Commercial Products; www.rubbermaidcommercial.com
      c. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Combination Utility Shelf, Mop and Broom Holder: stainless steel, Type 304, with (1) One inch return edges, including steel wall brackets.
   1. Drying rod: Stainless steel, (1) One inch diameter.
   2. Hooks: (5) Five stainless steel rag hooks, shelf front.
   3. Mop, broom holders: (3) Three spring loaded rubber cam holders, shelf front.
   4. Length: (42) Forty Two inches.
   5. Products:
      a. American Specialties, Inc.; www.americanspecialties.com.
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION, PROTE

A. Verify all Existing Project Site conditions, prior to commencing any Work, this Section.

B. Confirm exact locations, all Work, this Section, prior to beginning any Work, this Section.

3.02 PREPARATION

A. Deliver all inserts and rough in frames to Existing Project Site, as required to provide timely installation, all Work, this Section.

B. Provide all templates and rough in measurements as required.

3.03 INSTALLATION

A. Install all accessories in full accordance with Manufacturers' written instructions.

B. Install all accessories plumb, level, securely, rigidly and anchored to substrate.

C. Mounting Heights: As delineated within Contract Documents and required by those Local Authorities having Jurisdiction.

3.04 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately**.

END OF SECTION

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SECTION 10 43 00
EMERGENCY AID SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Emergency Aid Specialties.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 - Miscellaneous Rough Carpentry.

B. Section 09 91 23 - Interior Painting.

1.03 DEFINITIONS

A. Automated External Defibrillator (AED): A Food and Drug Administration (FDA)-approved portable device, which automatically analyzes the heart rhythm and recognizes the presence of ventricular fibrillation and/or tachycardia. If defibrillation is warranted, the AED automatically charges and prompts (visual and/or audio) the operator to deliver an electrical shock.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide AED operational features, color and finish, anchorage details, and installation instructions.

C. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

D. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include test schedules and recertification requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Automated External Defibrillators (AEDs):
   1. Philips Medical Systems:www.usa.philips.com.
   2. Stryker Corporation; HeartSine samaritan PAD 350P Defibrillator - PAD 350p: www.stryker.com.
   3. ZOLL Medical Corporation: www.zoll.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Emergency Aid Cabinets and Accessories:
   1. Activar Construction Products Group, Inc. - JL Industries; LifeStart 1400 Series AED Cabinet: www.activarcpg.com.
   2. ICC-500 20202 (storm shelter) section 702.9-Class A, in compliance with ANSI/ISEA Z308.`, Current Editiion.
   3. Modern Metal Products, a division of Technico, Inc.: www.modern-metal.com.
   4. Substitutions: Reference Section - Product Requirements for additioal Content.

2.02 AUTOMATED EXTERNAL DEFIBRILLATORS

A. Automated External Defibrillators (AEDs) - General: FDA approval required.
   1. Provide automated external defibrillators (AEDs) as indicated.

2.03 EMERGENCY AID CABINETS

A. Type: Automated external defibrillator (AED).

B. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.

C. Cabinet Construction: Non-fire-rated.

1. Formed primed steel sheet; 0.036 inch thick base metal.
2. Formed aluminum; base mtal thickness per Manufacturer's instructions.

D. Fire Rated Cabinet Construction:
1. Steel; double wall or outer and inner boxes with 5/8 inch thick fire barrier material.

E. Cabinet Configuration: fully recessed type.
1. Size to accommodate AED.
2. Nominal dimensions as indicated on drawings.
3. Trimless type.
4. Trim: Flat square edge.
5. Projected Trim: Returned to wall surface.
6. Provide cabinet enclosure with right angle inside corners and seams, including formed perimeter trim and door stiles.

F. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with wire pull handle and nylon catch. Hinge door for 180 degree opening with two butt hinges.

G. Door Glazing: Tempered glass, clear, 1/8 inch thick, set in resilient channel glazing gasket.

H. Cabinet Mounting Hardware: Appropriate to cabinet, with predrilled holes for placement of anchors.

I. Fabrication: Weld, fill, and grind all components smooth.

J. Finish of Cabinet Exterior Trim and Door: As selected by Architect from Manufacturer's full range of options.

K. Finish of Door Pull or Handle: As selected by Architect from Manufacturer's full range of options.

L. Finish of Cabinet Interior: As selected by Architect from Manufacturer's full range of options.

2.04 ACCESSORIES

A. Theft Alarm: Battery operated audible and strobe light alarm, 10 second delay for disarming, activated by opening cabinet door.

B. Alarm Contacts: Contact devices.
1. Magnetic door contact for existing alarm systems.

C. Cabinet Door Signage: 'AED” decal, or vinyl self-adhering, prespaced black lettering and identifying graphic in accordance with authorities having jurisdiction (AHJ).

D. Plastic Wall Signage: Flat style.

E. Floor Signs:
1. Floor Sign: 17-1/2 inch diameter vinyl sign with "AED" and AED icon.
2. Manufacturers:
a. Insite Solutions, LLC:www.stop-painting.com.
b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

F. Floor Marking Kits:
1. Floor Marking Tape for AED Access Identification: Self-adhesive vinyl or polyester tape with overlaminate, 2 inches wide, with "DO NOT BLOCK" on the 36 inch (914 mm) side strips and "AED" and AED icon on the 24 inch (610 mm) middle strip.
2. Floor Sign: 17-1/2 inch diameter vinyl sign with "AED" and AED icon.
3. Manufacturers:
a. Insite Solutions, LLC: www.stop-painting.com.
b. Substitutions: Reference Setion 01 60 00 - Product Requirements for additional Content.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. Verify all Existing Project Site conditions prior to beginning an Work, this Section.

B. Confirm all rough openings, cabinets are correctly sized and located.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install only in full accordance with Manufacturer's written instructions.

B. Install cabinets plumb and level, within wall openings, mounting height above finished floor to inside bottom of cabinet, as directed by Local Authority having Jurisdiction.

C. Secure rigidly in place.

D. Place AEDs in cabinets.

E. Wall Signs:
   1. Location: As delineated within Contract Documents.
   2. Apply on walls after field painting is completed and has been accepted.

F. Cabinet Lettering:
   1. Apply lettering on field-painted cabinets after painting is complete and has been accepted.
   2. Apply lettering on factory-finished cabinets either at the factory or just prior to Substantial Completion.

3.03 ADJUSTING, CLEANING

A. Remove all temporary protective coverings, strippable films.

B. Adjust cabinet doors to operate smoothly without binding. Verify that alarms and integral locking devices operate properly.

C. Thoroughly clean all Work, this Section

END OF SECTION

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SECTION 10 44 00
FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire Protection Specialties.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 - Miscellaneous Rough Carpenry

B. Section 09 91 23 - Interior Painting

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

B. FM (AG) - FM Approval Guide; Current Edition.

C. NFPA 10 - Standard for Portable Fire Extinguishers; 2022.

D. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Detailed Product Data including all operational features particular to this Project.

C. Shop Drawings: Detailed and scaled including all cabinet locations and dimensions.

D. Manufacturer's Installation Instructions: Thoroughly detailed and coordinated to this particular Project including any necessary special criteria and wall opening coordination requirements.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include test, refill, recharge schedules and all re-certification requirements.

1.05 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Activar Construction Products Group, Inc. - JL Industries; Cosmic Extinguisher - Multipurpose Chemical: www.activarcpg.com.
   2. Kidde, a unit of United Technologies Corp: www.kidde.com.
   3. Oval Brand Fire Products; Oval Dry Chemical Fire Extinguisher - Multipurpose ABC: www.ovalfireproducts.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Fire Extinguisher Cabinets and Accessories:
   1. JL Industries, Inc.
   2. Larsen's Manufacturing Co: www.larsensmfg.com.
   3. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

C. Fire Hose and Hydrant Cabinets and Accessories:
   1. Safety One; Hose & Hydrant Storage Series: www.safetyone.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 FIRE EXTINGUISHERS

A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.

B. Water Type Fire Extinguishers: Stainless steel tank, pressurized, with premixed antifreeze solution, including hose and nozzle.
   1. Class: 2-A type.
   2. Finish: Polished chrome.
   3. Temperature Range: Minus (40) forty degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

C. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Cartridge Operated: Spun shell.
   2. Stored Pressure Operated: Deep Drawn.
   3. Class: A:B:C type.
   4. Size: 5 pound.
   5. Finish: Baked polyester powder coat, red color.
   6. Temperature range: Minus (65) sixty five degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

D. FFFP - Foam Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: A:B type.
   2. Size and classification as scheduled.
   3. Finish: Polished stainless steel.
   4. Temperature range: Minum (40) forty degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

E. Carbon Dioxide Type Fire Extinguishers: Aluminum tank, with pressure gauge.
   1. Class: B:C type.
   2. Size and classification as scheduled.
   3. Finish: Baked enamel, color as selected.
   4. Temperature range: Minus (40) forty degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

F. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: K type.
   2. Size: 1.6 gallons.
   3. Size and classification as scheduled.
   4. Finish: Polished stainless steel.
   5. Temperature range: Minus (40) forty degrees fahrenheit to (120) one hundred twenty degrees fahrenheit.

G. FE-36 Clean Agent Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
   1. Class: A:B:C type.
   2. Size: 2.5 pound.
   3. Size and classification as scheduled.
   4. Finish: Baked polyester powder coat.
   5. Temperature Range: Minus (40) Forty degrees fahrenheit to (120) One Hundred Twenty degrees fahrenheit.

2.03 SELF SERVICE, RELOADABLE FIRE EXTINGUISHERS

A. Self-Service Reloadable Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.
   2. Self Service Features:
      a. Special license or certification not necessary for required monthly and annual inspections.
      b. Pending direction from those Local Authorities having Jurisdiction (AHJ), special license or certification may be required to service, reload units.
      c. Reloadable on site with extinguisher agent and carbon dioxide cartridges.

B. Multipurpose Monoammonium Phosphate Dry Chemical Type Fire Extinguishers: Polymeric body, including discharge head, carbon dioxide cartridge, extinguisher agent cartridge and valve assembly.
   1. Pressurization: Non pressurized until pressurized by carbon dioxide cartridge activation.
   2. Class: 3A:40B:C type.
   3. Size: 5 pound.
   4. Size and classification as scheduled.
   5. Finish: Manufacturer's standard finish with adhered instruction labels.
   6. Temperature range: Minus (40) Forty degrees fahrenheit to (120) One Hundred Twenty degrees fahrenheit.

2.04 FIRE EXTINGUISHER CABINETS

A. Basis of Design: Larsen's Manufacturing Co.Aluminium with clear satin anodized finish.
   1. Verticle duo with clear acrylic glazing and verticle red letters.
   2. Semi recessed aluminum cabinets located within gypsum board and metal stud partitions. Notify Architect and Fire Marshall when metal stud framing is in place for locating cabinets. Model numbers shall be determined by wall thickness and locations determined by Fire Marshal.
   3. Fully recessed aluminum cabinets, set to partitions, as delineated within Contract Documents.

B. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.

C. Cabinet Construction: Non fire rated.
   1. Formed primed steel sheet; 0.036 inch thick base metal.
   2. Formed aluminum: 0.128 inch thick base material.

D. Fire Rated Cabinet Construction: One-hour fire rated.
   1. Steel; double wall or outer and inner boxes with 5/8 inch thick fire barrier material.

E. Cabinet Configuration: Semi-recessed type.
   1. Size to accommodate accessories.
   2. Exterior nominal dimensions of as indicated on drawings.
   3. Trimless type.
   4. Provide cabinet enclosure with right angle inside corners and seams, and with formed perimeter trim and door stiles.

F. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.

G. Door Glazing: Float glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.

H. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.

I. Cabinet Mounting Hardware: Appropriate to cabinet, with pre drilled holes for placement of anchors.

J. Fabrication: Weld, fill, and grind components smooth.

K. Finish, Cabinet, Trim and Door: As selected by Architect from Manufacturer's full range of options.

L. Finish of Cabinet Interior: White colored enamel.

2.05 KNOX BOX

A. (2) Two Fully recessed type, locations as directed by Architect, including lift off type door, with UL listed tamper switches. 1/4" plate steel housing. 1/2" thick steel door with interior gasket seal. Box and lock shall be UL listed. Lock shall include1/8" thick stainless steel dust cover with tamper seal mounting.
   1. Exterior Dimensions: 8"H x 8"W x 3 3/4"D.

2. Recessed Mount Flange: per Manufacturer.
3. Lock: UL listed, double action rotating tumblers and hardened steel pins accessed by a biased cut key.
4. Finish: As selected by Architect from Manufacturer's full range of options.
5. Color: As selected by Architect from Manufacturer's full range of options.
6. P/N: 3200 Series Knox Box.
7. Manufacturer: Knox Company; www.knoxbox.com.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. **Verify all** existing conditions prior to beginnng Work, this Section

B. **Coordinate, confirm all** rough openings are correctly sized, located, prior to starting Work, this Section.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately.**

3.02 INSTALLATION

A. Install all Work this Section, in full accordance with Manufacturer's written instructions.

B. Install all cabinets plumb and level, within wall openings.

C. Secure all Work rigidly in place.

D. Place Fire Extinguisher within ceach cabinet.

3.03 MAINTENANCE, SELF SERVICE FIRE EXTINGUISHERS

A. Annual Inspections: Inspect all self service fire extinguishers in full accordance with Manufacturer’s instructions, and all requirements of those Local Authorities having Jurisdiction.

B. Inspection Certification Tag: Provide new tag, indicating acceptable condition of fire extinguisher, date of inspection, and name of inspector, for each inspection.

END OF SECTION

SECTION 10 50 31
TURNOUT GEAR LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Turnout Gear Lockers.

1.02 RELATED SECTIONS

A. Section 06 10 53: Miscellaneous Rough Carpentry

1.03 SUBMITTALS

A. Product Data: Submit thorouchly detailed Manufacturer's Product Data, Iinstallation instructions, particular to this Project.

B. Shop Drawings: Submit Manufacturer's thoroughly detailed Shop Drawings, each individual run of lockers, this particular Project.

C. Product Samples: Submit (2) Two Product Samples, Manufacturer's standard size, as required to accurately represent construction, operation, color and finish.

D. Owner's Manual: Provide thoroughly detailed Owner's Maintenance Manual, particular to this Project, with closeout documentation Package.

E. Warranty: Submit Manufacturer's (20) Twenty Year Warranty, particular to this Project.

1.04 QUALITY ASSURANCE

A. Manufacturer shall have a minimum (20) Twenty Years documented experience, Manfacture of Work, this Section.

B. Installer shall have minimum (15) Fifteen Years documented experience, installation, Work, this Section.

C. Reference:
   1. Fully comply with ASTM A513; Minimum properties of Electric-Resistance-Welded Carbon Allow Steel Mechanical Tubing.
   2. Fully comply with ASTM A510; Minimum properties of Wire Rods and Coarse Round Wire, Carbon Steel and Alloy Steel.

1.05 DELIVERY, STORAGE, HANDLING

A. Delivery: Deliver all materials to Existing Project Site within Manufacturer's original, unopened containers, including labels identifying Product and Manufacturer's name.

B. Storage: Store all materials within clean dry area and above floor surface.

C. Handling: Protect all Work, this Section, from damage.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Basis of Design: GearGrid Corporation; www.geargrid.com.

B. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 TURNOUT GEAR LOCKERS

A. Model: GEARGRID Wall Mounted Storage System and GEARGRID Tube Wall Storage System
   1. Locker Sizes:
      a. As delineated within Contract Documents.
   2. Construction: Cold formed, welded joints. Fasteners only as required for knock-down shipping, securing units to mounting surface and on applicable accessories.
      a. Vertical Dividers:
         1) Outer Frames: 1.25" O.D. x 16 gauge wall thickness ASTM A513 steel tubing.
         2) Inner Grid:

(a) 0.25” diameter ASTM 510 cold drawn steel wire resistance welded to a 3” square pattern.
(b) Full length and width of inside vertical divider frame.
(c) Run oriented horizontally and vertically creating a square grid pattern.
(d) Welded at all intersections.

b. Back Panel:
1) Required, each locker.
2) Grid: .25” diameter ASTM 510 cold drawn steel wire resistance welded to a 3” square pattern.
3) Sandwiched between vertical dividers, preventing them from being removed after assembly is complete.

c. Shelves: (1) Upper, (1) Lower. 0.25” diameter ASTM 510 cold drawn steel wire resistance welded and cold formed.

d. Apparel Hooks:
1) (3) per locker opening, 0.192” diameter ASTM 510 cold drawn steel wire resistance welded, cold formed, vinyl coating, entire hook.
2) Securely engage and snap onto side or back grid, as required to prevent unintentional disengagement of hook.

B. ACCESSORIES
1. Door:
a. Frame: 1.25” O.D. x 16 gauge wall thickness ASTM A513 steel tubing.
b. Inner Grid: .25” diameter ASTM 510 cold drawn steel wire resistance welded to a 3” square pattern.
1) Wires must be full length and width of inside vertical divider frame.
2) Welded at all intersections
c. Top Cover: .25” diameter ASTM 510 cold drawn steel wire resistance welded to a 3” square pattern.
1) Secured to vertical dividers via horizontal wires which extend into mounting holes pre drilled within vertical dividers.
2) Sandwiched between vertical dividers, preventing them from being removed, after assembly is complete.
d. Hinge: Single pin welded style with brass pivot bushing. Door and Vertical Divider hinge components must be welded, not mechanically fastened.
e. Placard Channel: 20 gauge steel to accept a 2” x 12” name placard, securely welded to inner grid panel
f. Latch, Hasp: Self latching with padlock hasp.
1) Minimum .125 in. sheet steel welded to frame.
2) Lock by Owner.
2. Hang Bar
a. Hang Bars:
1) Adjustable height
2) Tube: 1.25” O.D. x 16 gauge 304 stainless steel tubing.
3) Brackets: Attaches to dividers.
4) Heavy Hanger:
(a) .25” diameter 304 stainless steel wire cold formed and resistance welded.
(1) Black vinyl coating, entire hook.
(b) Gear Dryer Hanger:
(1) .25” diameter 304 stainless steel wire cold formed and resistance welded. Includes formed loops to prop open sleeves on jackets to promote better circulation throughout the garment.
(2) Black vinyl coating, entire hook.
(c) Glove Drying Hanger:

(1) .25” diameter 304 stainless steel wire cold formed and resistance welded.
(2) Black vinyl coating, entire hanger.

C. Finish
1. General: All system components shall receive Finish as selected by Architect from Manufacturer's full range of options, including anti corrosive Primer.
a. Standard Finish: Durable and UV-stable TGIC powder coating process. Thickness of applied finish shall be 3 to 4 mm for added protection.
1) Provide anti-corrosive Primer.
b. Color: As selected by Architect from Manufacturer's full range of options.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Thoroughly examine all** areas scheduled to receive lockers. Notify Architect, immediately, if any areas are not acceptable. **Do not** begin installation until all unacceptable conditions have been corrected.

3.02 INSTALLATION

A. **Install all** lockers in full accordance with Manufacturer’s written instructions.

B. **Use only** Manufacturer’s hardware for assembly.

C. Anchor to mounting surface with proper hardware. Secure lockers with anchor devices, as required to suit substrate materials, this particular Project.

D. **Install all** Work, this Section plumb and square.

E. Minimum Pullout Force: (100) One Hundred pounds.

F. Bolt each adjoining locker unit together, as required to provide rigid installation.

G. Install end panels, filler panels, and sloped tops, as required, this particular Project.

H. Install all necessary fittings, not previously factory installed.

I. Replace all components that do not operate smoothly.

3.03 CLEANING, PROTECTION

A. Thoroughly clean all Work, this Section.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 10 51 13
METAL LOCKERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal lockers.

1.02 RELATED REQUIREMENTS

A. Section 06 10 53 - Miscellaneous Rough Carpentry.

B. Section 06 20 00 - Finish Carpentry.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2025a.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025.

D. ASTM A879/A879M - Standard Specification for Steel Sheet, Zinc Coated by the Electrolytic Process for Applications Requiring Designation of the Coating Mass on Each Surface; 2022.

E. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2024.

F. ASTM F1267 - Standard Specification for Metal, Expanded, Steel; 2018 (Reapproved 2023).

G. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's thoroughly detailed data, particular to this Project, re: ocker construction, sizes, and accessories.
   1. Wired Access Control: Include all power requirements and wiring diagrams, all Products delineated within Contract Documents.

C. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.

D. Product Sample: Two (2) Product Samples, Manufacturer's standard sized, as required to accurately represent construction, color, finish, sheen, hardware and accessories.

E. Manufacturer's written Installation Instructions: Thoroughly indicate all component installation assembly.

1.05 DELIVERY, STORAGE, HANDLING

A. Protect all Work, this Secton, from damage

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Lockers:
   1. Art Metal Products: www.artmetalproducts.com.
   2. ASI Storage Solutions: www.asi-storage.com.
   3. Penco Products, Inc. www.pencoproducts.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content..

2.02 METAL LOCKERS

A. Accessibility: Design all units, as required to fully compl wiht accessabilty standards and those Local Authorities having Jurisdiction.

B. Locker Case Construction:

1. Heavy Duty Welded Construction: Made of formed, welded together sheet steel; metal edges finished smooth without burrs, powder coated finish, all surfaces.
    a. Assembly: Do not use bolts, screws, or rivets within Locker assembly.
    b. Locker Body Components: Formed and flanged from steel sheet of the following type and minimum thicknesses:
        1) Unperforated Steel Sheet: Commercial Steel (CS), Type B, supplied for exposed applications and complying with ASTM A1008/A1008M and the following:
            (a) Uncoated.
            (b) Zinc Coated by the Hot-Dip Process: Comply with ASTM A653/A653M, coating designation G60/Z180.
            (c) Zinc Iron Alloy Coated by the Hot Dip Process: Fully comply with ASTM A653/A653M, coating designation A40/ZF120.
            (d) Zinc-Coated by the Electrolytic Process: Comply with ASTM A879/A879M, coating designation 30Z.
            (e) Perforations: Manufacturer's standard pattern of square holes.
        2) Expanded Steel Sheet: Made from ASTM A1008/A1008M carbon steel sheet and fully complying with ASTM F1267, Type II, expanded and flattened, style 3/4 - 16, with a minimum 70 percent open area.
            (a) Class 1, uncoated.
            (b) Class 2, hot dip zinc-coated, galvanized or galvannealed.
        3) Body and Shelves: 16 gauge, 0.0598 inch.
        4) Backs: 18 gauge, 0.0478 inch.
        5) Base: 18 gauge, 0.0478 inch.
            (a) Height: 4 inches.
        6) Legs: Manufacturer's standard
            (a) Form by extending frame members.
            (b) Fabricate from 14 gauge, 0.0747 inch nominal thickness steel sheet specified above, welded to bottom of locker.
            (c) Height: 6 inches.
    c. Frames: Formed channel shape, welded and ground flush, welded to body, resilient gaskets and latching for quiet operation.
        1) Door Frame: 16 gauge, 0.0598 inch, minimum.
    d. Where ends or sides are exposed, provide flush panel closures.
    e. Provide filler strips where indicated or required, securely attached to lockers.

C. Drawer Base with Bench:
    1. Top, Bottom, Sides, Back, and Drawer: 16 gauge, 0.0598 inch sheet steel.
    2. Slides: Steel, full extension arms, ball bearings; self-closing; capacity as recommended by manufacturer for drawer height and width.
    3. Integral self latching mechanism triggered by operation of wardrobe door.
    4. Bench: Mixed hardwood.

D. Doors: Channel edge; welded construction, manufacturer's standard stiffeners, grind and finish edges smooth.
    1. Door Thickness: 16 gauge, 0.0598 inch, minimum.
    2. Form recess for operating handle and locking device.

E. Latches and Door Handles: Manufacturer's standard.
    1. Latching Components: 300 Series Stainless Steel (ASTM A240/A240M).
    2. Latching: Manufacturer's standard for locking arrangement selected.
        a. Three Point Lift Handle Gravity Latch: Pocket-mounted, provide for doors 18 inches or taller.
            1) Handle Pocket, Recess: Stainless steel flush-mounted cup recessed into face of door.

2) Handle: Steel finger lift mechanism with exposed portion encased in molded plastic trigger.
   (a) Padlock Eye: Integral with lift trigger, sized for use with 9/32 inch diameter padlock shackles.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Verify all** prepared bases are in correct position and configuration.

B. **Confirm all** bases and embedded anchors are properly sized.

C. **Verify all** power and ethernet are installed and enabled. See Manufacturer drawings for recommended outlet or junction box placement.

3.02 INSTALLATION

A. Install all Products in full accordance with Manufacturer's written instructions.

B. Place and secure on prepared base.

C. Install all lockers plumb and square.

D. Secure lockers with anchor devices, as required to suit substrate materials, this particular Project. Minimum Pullout Force: (150) One Hundred Fifty pounds.

E. Bolt all adjoining locker units together, as required to provide rigid installation.

F. Install all end panels, filler panels, and sloped tops.

G. Install all fittings not factory installed.

H. Replace all components that do not operate smoothly.

3.03 CLEANING, PROTECTION

A. Thoroughly clean all Work, this Section.

B. **Protect all Work, this Section, from Damage.**

C. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 10 75 00
FLAGPOLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flagpoles.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast in Place Concrete.

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY " ...

A. AASHTO M 36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains; 2024.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

D. ASTM A312/A312M - Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes; 2025.

E. ASTM B43 - Standard Specification for Seamless Red Brass Pipe, Standard Sizes; 2020.

F. ASTM B135/B135M - Standard Specification for Seamless Brass Tube; 2017.

G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

I. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube; 2022.

J. NAAMM FP 1001 - Guide Specifications for Design Loads of Metal Flagpoles; 2007.

K. NEMA MG 00001 - Motors and Generators; 2024.

L. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for addional Content.

B. Product Data: Provide thoroughly detailed Produt Data,including all accessories, configurations, partticular to this Project.

C. Shop Drawings: Thoroughly detailed Shop Drawings indicating all dimensions, details, anchor requirements, and imposed loads, this particular Project.

D. Product Samples; Submit (1)) One Product Sample, Manufacturer's standard size, as required to accurately represent constructon, scale, materials, operation, color and finish.

E. Designer's Qualification Statement.

F. Operation Data: Provide thoroughly detailed operating data, particular to this Project.

G. Maintenance Data: Provide detailed maintenance requirement schedule.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Design flagpole foundation under direct supervision of a Professional Structural Engineer experienced in design Work, this Section and licensed within State this Existinhg Project Site resides.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as required by Contract Documents, this particular Project.

1.06 DELIVERY, STORAGE, HANDLING

A. Spiral wrap all materials, this Section,including packaging within protective shipping tubes, containers, as required, this particular Project.

B. **Protect all Work, this Section, from damage.**

C. **Replace all damaged Work, this Section, immediately.**

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flagpoles:
   1. Concord American Flagpole www.concordamericanflagpole.com.
   2. Morgan-Francis Flagpoles & Accessories: www.morgan-francis.com.
   3. Pole Tech Co, Inc.: www.poletech.com.
   4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 FLAGPOLES

A. Flagpoles: Designed in full accordance with NAAMM FP 1001.
   1. Material: Aluminum.
   2. Design: Cone, tapered.
   3. Mounting: As delineated within Contract Documents.
   4. Outside Butt Diameter: As delineated within Contract Documents.
   5. Outside Tip Diameter: As delineated within Contract Documents.
   6. Nominal Wall Thickness: As delineated within Contract Documents.
   7. Nominal Height: As delineated within Contract Documents.
   8. Halyard: Internal Type.

B. Performance Requirements:
   1. Wind Pressure Loading on Flagpole with Flag: Resistant without any deformation and in accordance with NAAMM FP 1001, Current Edition.

2.03 POLE MATERIALS

A. Aluminum: ASTM B241, 6063 alloy, T6 temper.

2.04 ACCESSORIES

A. Finial Ball: (6) Six inch diameter Aluminum.

B. Truck Assembly: Cast alumum, revolving, including stainless steel ball barings, non fouling.

C. Cleats: (9) Nine inch aluminum, including galvanized steel faftenings, (1) One per haylard.

D. Cleat Box: Aluminum, including built in hinge, hasp assembly attched to pole with tamper proof screws inside box.

E. Halyard: 5/8 inch diameter, braided white nylon.

F. Primer: Zinc chromate type.

2.05 OPERATORS

A. Hand Crank: Removable

2.06 MOUNTING COMPONENTS

A. Foundation Tube Sleeve: AASHTO M 36, corrugated 16 gauge, 0.0598 inch steel, galvanized, depth as delineated within Contract Documents.

B. Pole Base Attachment: Flush; steel base with base cover.

C. Wall Support Assembly: Galvanized steel; round; one piece assembly, back plate for through bolting, with galvanized steel anchor bolts and cover.

2.07 FINISHING

A. All Metal Surfaces in Contact With Concrete: Asphaltic paint.

B. All Steel Surfaces: Galvanized to ASTM A123/A123M requirements.

C. All Aluminum Surfaces: Mill finish.

PART 3 EXECUTION

3.01 EXAMINATION, PROTECTION

A. **Verify entire concrete foundation** is ready to receive Work, this Section prior to begining Work, this Section

B. Confirm electric power source is both available, of correct characteristics.

C. **Protect all Work, this Section, from Damage.**

D. **Replace all Damaged Work, this Section, immediately**.

3.02 PREPARATION

A. Coat all sleeve surfaces, below grade and all surfaces in contact with any dissimilar materials with asphaltic paint.

3.03 INSTALLATION

A. Install flagpole and all fittings in full accordance with Manufacturer's instructions.

B. Fill foundation tube sleeve with concrete as specified in Section 03 30 00 - Cast in Place Concrete.

C. Install foundation plate and centering wedges for flagpole base, set within concrete base and fasten.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/2 inch.

3.05 ADJUSTING

A. **Adjust all** operating devices, as required for smooth function.

END OF SECTION

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SECTION 10 82 13
EXTERIOR GRILLES AND SCREENS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior Grilles and Screens.

1.02 RELATED REQUIREMENTS

A. Section 05 12 00 - Steel Framing.

1.03 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY " ...

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

B. AAMA 612 - Voluntary Specification, Performance Requirements, and Test Procedures for Combined Coatings of Anodic Oxide and Transparent Organic Coatings on Architectural Aluminum; 2020, with Errata (2022).

C. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

D. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

E. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2025.

F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

H. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2025.

I. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

J. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

K. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

L. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position; 2022.

M. ASTM D1187/D1187M - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal; 1997 (Reapproved 2024).

N. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics; 2023.

O. ASTM D2843 - Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics; 2022.

P. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

Q. ASTM F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs; 2024.

R. NFPA 268 - Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source; 2022.

S. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2025.

T. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2023, with Errata.

1.04 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Shop Drawings: Provide thoroughly detailed shop drawings Submittal , indicating all component profiles, sections, finishes, fastening details particular to this Project, including Manufacturer's descriptive technical data.
   1. Include all necessary field dimensions, elevations, details, particular to this Project.
   2. Identify distinction between all factory assembled and field assembled Work.

C. Samples: Provide (2) Two Product Samples, Manufacturer's standard sized, as required to clearly illustrate construction, color, sheen and finish.

D. Design Data: Submit comprehensive structural analysis of design, including particular specified loads. Stamp and sign calculations by professional engineer.

E. Designer's Qualification Statement.

F. Manufacturer's Qualification Statement.

G. Installer's Qualification Statement.

H. Warranty Documentation: Submit Manufacturer's Warranty and ensure all forms have been completed within Owner's name and registered with said Manufacturer.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Perform structural design under direct supervision of a Professional Engineer experienced in design of Work, this Section and licensed within State this Existinhg Project Site is located.

B. Manufacturer Qualifications: Company specializing in Manufacturing Products, this Section, Minimum (15) Fifteen Years documented experience.

C. Installer Qualifications: Company specializing in performing Work, this Section, minimum (15) Fifteen Years documented experience.

1.06 DELIVERY, STORAGE, HANDLING

A. Deliver all materials to Existing Project Siite withn Manufacturer's original, unopened packaging, including labels clearly identifying Manufacturer, material.

B. Store all materials indoors, while protecting from any moisture, humidity, extreme temperature fluctuations.

1.07 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. **Correct any, all defective Work immediately.**

C. Finish Warranty: Provide Manufacturer's (15) Fifteen Year Warrnty, to commence upon previously established Project Substantial Completion Date.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Exterior Grilles and RoofTop Mechanical Equipment Screens: **Basis of Design; Envisor Screeening By CityScapes Inc.**
   1. CityScapes Inc; Covrit: www.cityscapesinc.com.
   2. Construction Specialties, Inc: www.c-sgroup.co.
   3. DAMS Incorporated: www.damsinc.com.
   4. Lumabuilt: www.lumabuilt.com.
   5. Nelson Industrial, Inc.: www.nelsonii.com.
   6. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

B. Exterior Polycarbonate Mesh Screens:
   1. Kaynemaile Ltd.: www.kaynemaile.com.
   2. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 GRILLES

A. Aluminum Grilles:
   1. Grill Type:
      a. Bar Angle: As delineated within Contract Documents.
      b. Horizontal Bar Spacing: As delineated within Contract Documents.
      c. Vertical Bar Spacing: As delineated within Contrct Documents.
      d. Panel Depth: As delineated within Contract Documents.
   2. Grille Type: Tubular Shape.
      a. Pattern: As delineated within Contract Documents.
      b. Panel Depth: As delineated within Contract Documents.
   3. Panel Size and Configuration: As delineated within Contract Documents.
   4. Frame/Support: Extruded aluminum tube , flat aluminum bar.
   5. Wind Load Resistance: Designed as required to resist positive and negative wind loads, without damage or deformation.

2.03 SCREENS

A. Aluminum Screens:
   1. Screen Type: Perforated metal sheet.
      a. Hole Size and Spacing: Per Manufacturer.
      b. Hole Shape: Per Manufacturer.
      c. Panel Depth: Per Manufactuer.
   2. Screen Type: Laser cut, per Manufacturer.
      a. Panel Depth: Per Manufacturer.
   3. Panel Size and Configuration: As delineated within Contract Documents.
   4. Frame/Support: Extruded aluminum tube, flat aluminum bar.
   5. Wind Load Resistance: Designed as required to resist positive and negative wind load, without damage or deformation.
   6. Products:
      a. CityScapes Inc.: www.cityscapesinc.com
      b. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.04 MATERIALS

A. Aluminum Extrusions: ASTM B221 (ASTM B221M) alloy 6063, temper T5, 1/8 inch minimum wall thickness.

B. Aluminum Sheet: ASTM B209/B209M alloy 5005, with temper as required for forming.

C. Aluminum Coated Steel Sheet: ASTM A792/A792M.

D. Concealed Structural Supports: Aluminum, or steel coated for corrosion resistance and dissimilar metal isolation.

2.05 FABRICATION

A. Shop fabricate grilles, screens to the greatest extent possible.

B. Disassemble as necessary for shipping, handling, clearly mark units for proper reassembly.

C. Provide supports, anchorages, and accessories as required for complete assembled system.

D. Provide any inserts required for installation into concrete or masonry based support materials.

E. Fabricate all grilles, as required to ensure proper fit into openings of sizes indicated, this particular Project.

F. Attach grille panels to each other via welding.

2.06 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

B. Class I Color Anodized Finish: AAMA 611 AA-M12C22A42 Integrally colored anodic coating not less than 0.7 mils thick.

C. Natural Anodized Finish with Organic Seal: AAMA 612 Clear anodic coating with non aqueous electro-deposited organic seal; not less than 0.7 mils thick.

D. Color Anodized Finish with Organic Seal: AAMA 612 Electrolytically deposited colored anodic coating with non aqueous electro deposited organic seal; not less than 0.7 mils.

E. High Performance Organic Coatings: AAMA 2604; multiple coats, thermally cured fluoropolymer system.

F. Superior Performing Organic Coatings: AAMA 2605; multiple coats, thermally cured polyvinylidene fluoride system.

G. Powder coating as provided by Manufacturer.

H. Finish Color: As selected by Architect from Manufacturer's full range of options.

2.07 ACCESSORIES

A. Fasteners: ASTM F593 stainless steel or ASTM A307 carbon steel, sizes to suit installation conditions.

B. Anchors and Inserts: Corrosion resistant; type, size, and material required for loading and installation, this particular Project.

C. Bituminous Paint: Cold applied asphalt emulsion fully complying with ASTM D1187/D1187M.

PART 3 EXECUTION

3.01 EXAMINATION, MECHANICAL EQUIPMENT SCREENS

A. **Verify all** dimensions, tolerances, and method of attachment within other Work.

B. **Confirm all** other adjacent Work, that might damage grille finish, was previously completed, prior to start of Work, this Section.

C. **Verify al**l anchorage devices have been properly installed and located.

D. Provide Factory formed panel systems, including interlocking panel connections, any components necessary to this particular Project. Form all components true to shape, accurate in size, square and free from any defects, distortions. Cut all panels to precise lengths as delineated within previously approved Shop Drawings Submittal.

E. Fabricate all panels, as required to slide horizontally and allow full access to Mechanical Equipment.

F. Panel Design, Style, Trim; Envisor, Vertical, including 2.2 Rib Horizontal Solid and (2) Two step decorative top trim profile.

G. Trim and Closures; Fabricated from (24) gage metal and finished with coating systems as selected by Architect from Manufacturr's full range of options.

H. Framing; Fabricate, assemble all components within largest practical sizes, as required for delivery to Existing Project Site. Construct all corner assemblies to required shapes, only with tightly fitted joints.

I. **Provide, install all** components, as required for adequate anchorage of framing. Fabricate all anchors, related components of required materials.

3.02 INSTALLATION

A. Install in full accordance with Manufacturer's written installation instructions.

B. Coat all concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint, and allow to fully dry prior to installation of any Work, this Section.

C. Set all grilles level, plumb, with uniform joints, and in full alignment with all adjacent Work.

D. Mechanically secure all grilles to supporting structure.

E. **Do not** cut, trim any members, without prior written approval from Manufacturer; **do not** install any damaged Products.

3.03 TOLERANCES

A. Maximum Variation From True Position: 1/8 inch.

B. Maximum Offset From True Alignment: 1/8 inch.

3.04 CLEANING

A. Remove all temporary protective coverings, as Work, this Section, is installed.

B. Thoroughly clean all Work, this Section.

3.05 PROTECTION

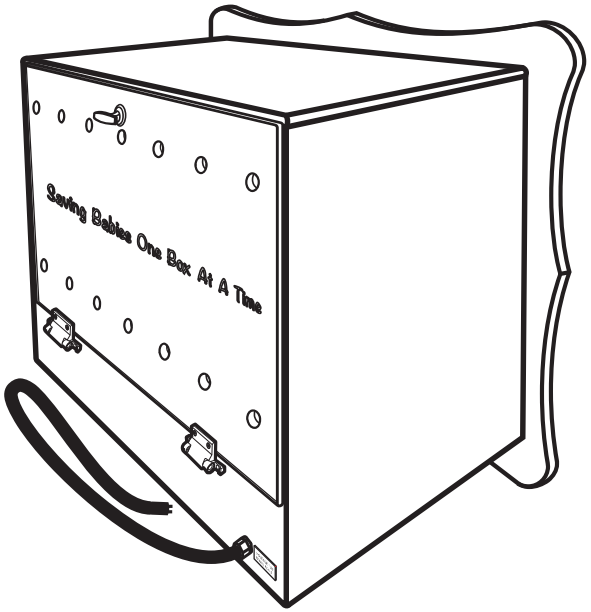
A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

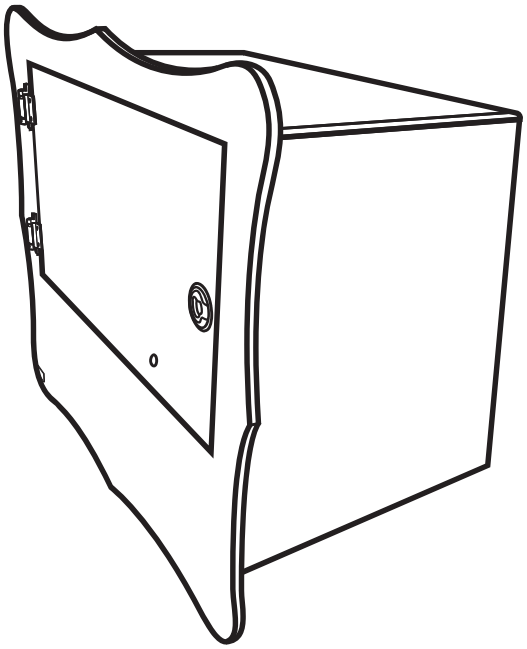
END OF SECTION

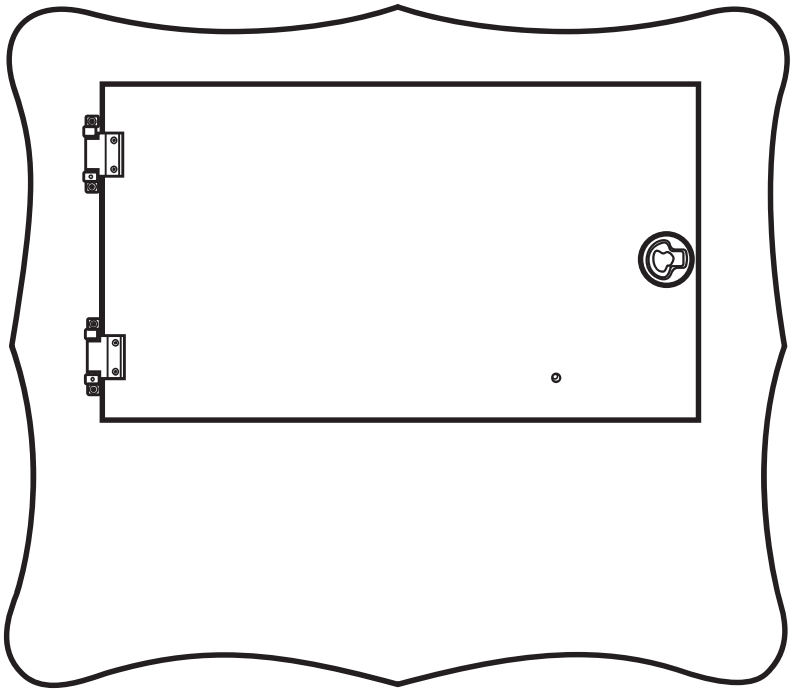
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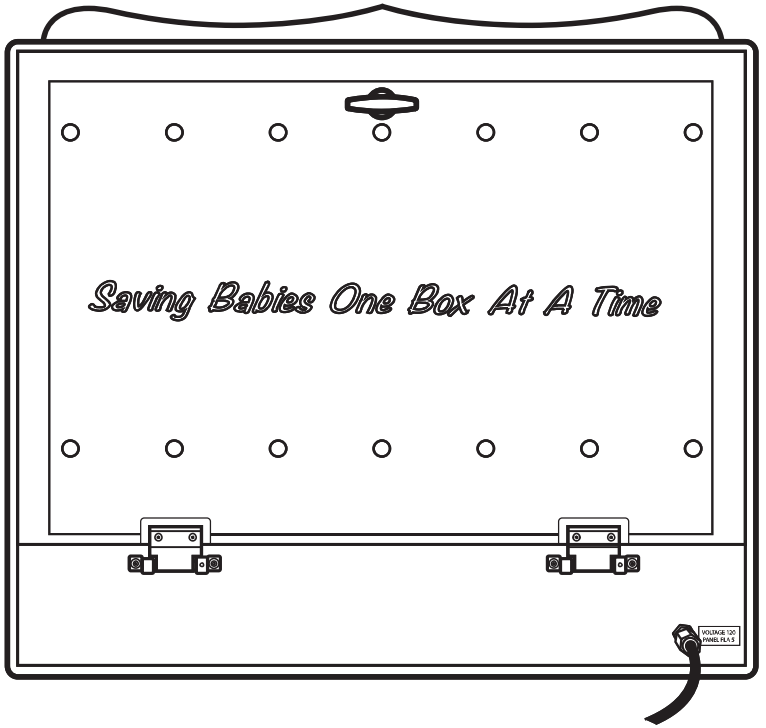
Safe Haven Baby Boxes



CONFIDENTIAL
CONFIDENTIAL
CONFIDENTIAL







Message to Contractors Installing the Baby Box

US Patent # 10,632,035

Any modifications to the baby box that are not provided for in this guide are strictly prohibited! This includes modifications to the beauty ring surrounding the outside door.

Safe Haven
Baby Boxes

Installation Information for Contractors

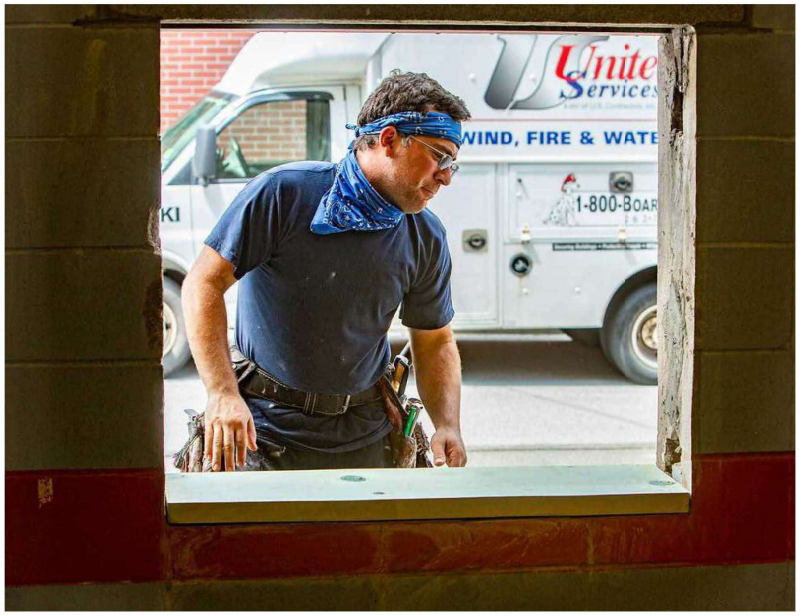
Apply for permits from the local building inspection authority, if applicable. SHBB may provide box specifications as needed and upon request. Contractor and facility owner should consider consulting with the building architect on file for the location, or a professional structural engineer.

Once permit is received, coordination with the site owner(s) and contractor may begin with demolition for installation.

The following are picture examples of an install at a fire station. Again, wall sections of each building will differ, and the owner and contractor should consult the building architect or a professional engineer for structural recommendations, such as a header.

The outside opening should be 30 inches from the ground to the bottom of the rough opening. Opening should be 34 inches tall by 38 inches wide to allow for box to be inserted into the wall and to allow space for wooden frame and/or insulation (see pics below).





Safe Haven
Baby Boxes





The baby box needs to be anchored through the previously installed wood frame.

- Block or Concrete Building: Use 3inch or longer tap-con anchors.
- Stick Built Building: Use 3 inch or longer wood screws.

Tap-con anchors or screws should be placed in 4 locations, either two on each side or top and bottom.

Safe Haven
Baby Boxes



In cases where the baby box is installed in a structural wall, a support beam may need to be installed.

Above are examples of a location where a steel beam has been installed.

Please note: *These pictures were taken before the wood frame was installed.*

Safe Haven
Baby Boxes





The Safe Haven Baby Box is flush with the outside wall and sealed.

Information is proprietary and confidential.

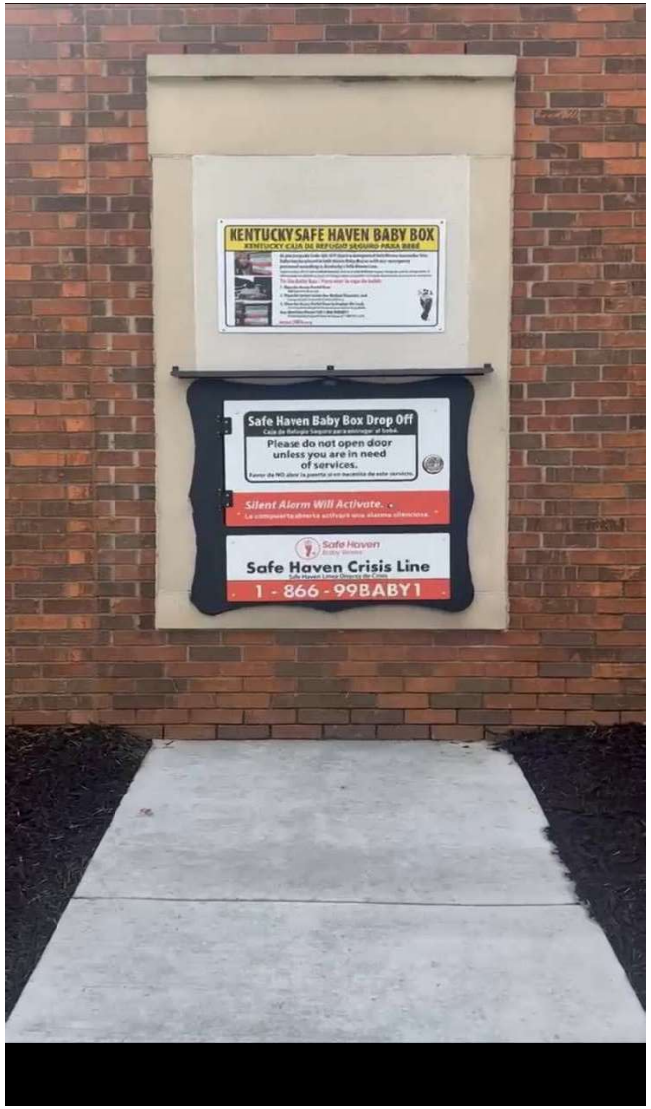
Safe Haven
Baby Boxes





<u>Add 1 inch or more insulation around the Baby Box.</u>
Do not force insulation as the baby box is made of plastic and can shift.

Safe Haven
Baby Boxes



There must be a clear walkway as you approach the device.

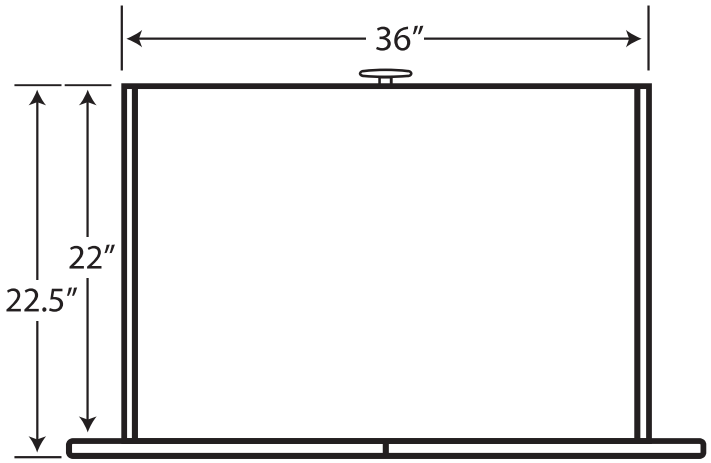
If a new walkway is installed, it must comply with your local building code.

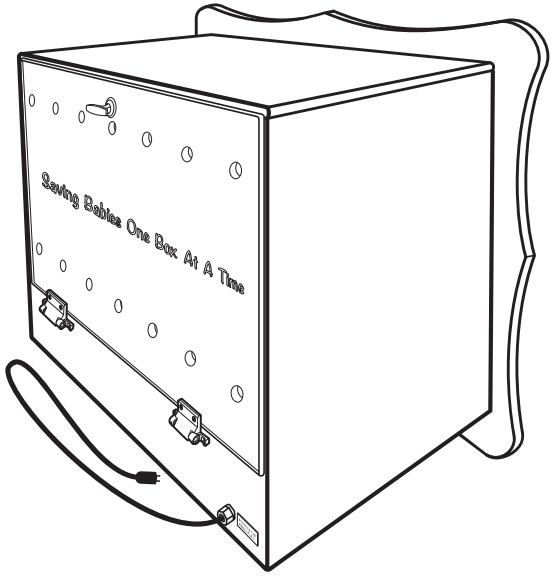
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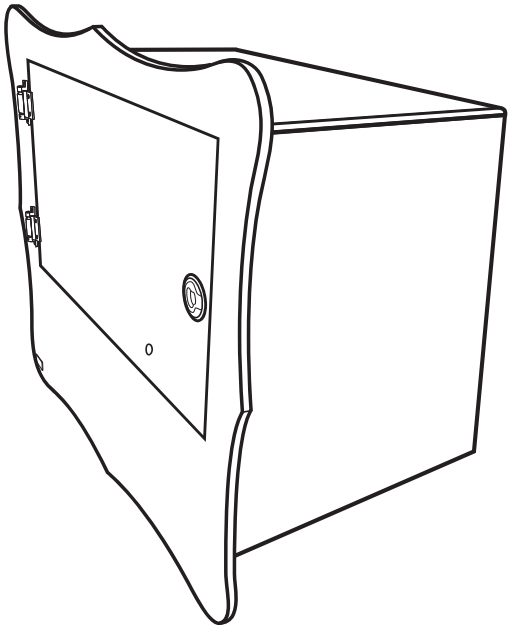
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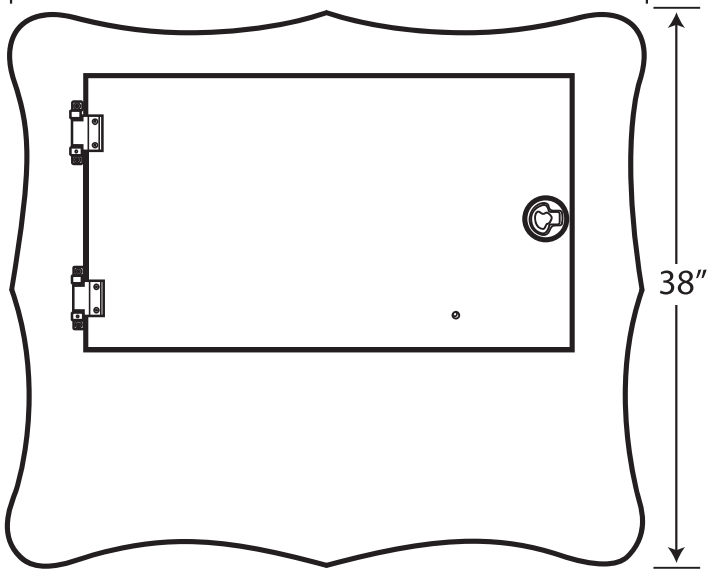
Safe Haven
Baby Boxes

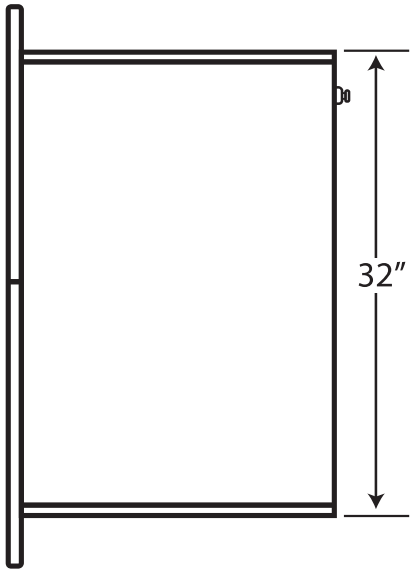
Information is proprietary and confidential

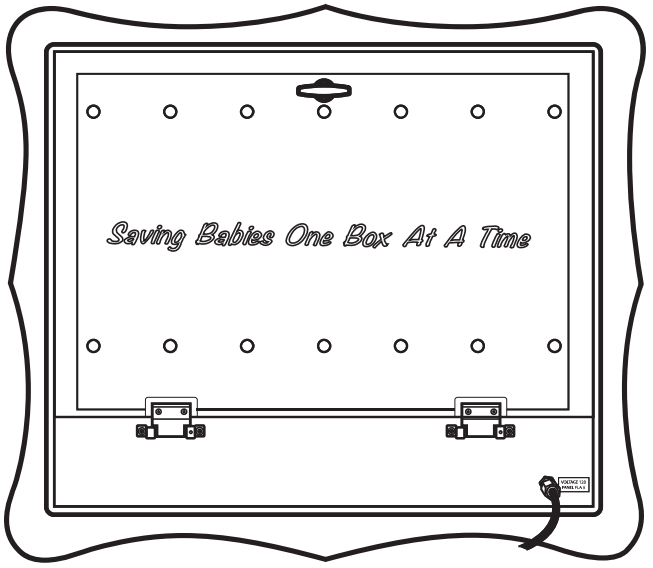




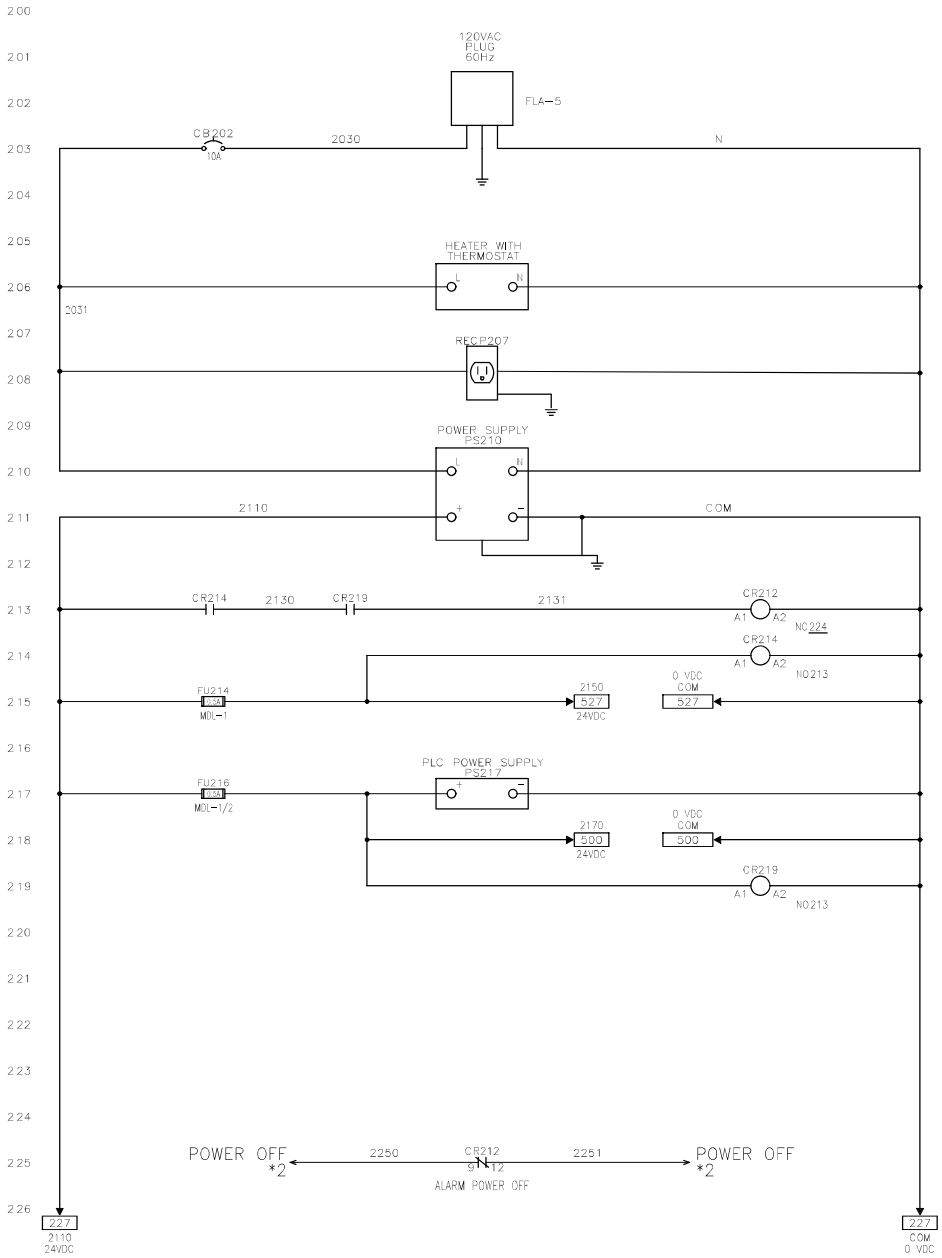








U.S. PATENT NO. 10,632,035







Safe Haven Baby Boxes

NOTES:

1. *POWER SUPPLY 120VAC TO 24VDC

2. *CONNECT WIRES TO ALARM MONITORING PANEL

3. *OPTIONAL CONNECTION TO IN HOUSE ALARM LIGHT OR HORN

4. 24VDC OR AC TO 120VAC, 2AMP MAX

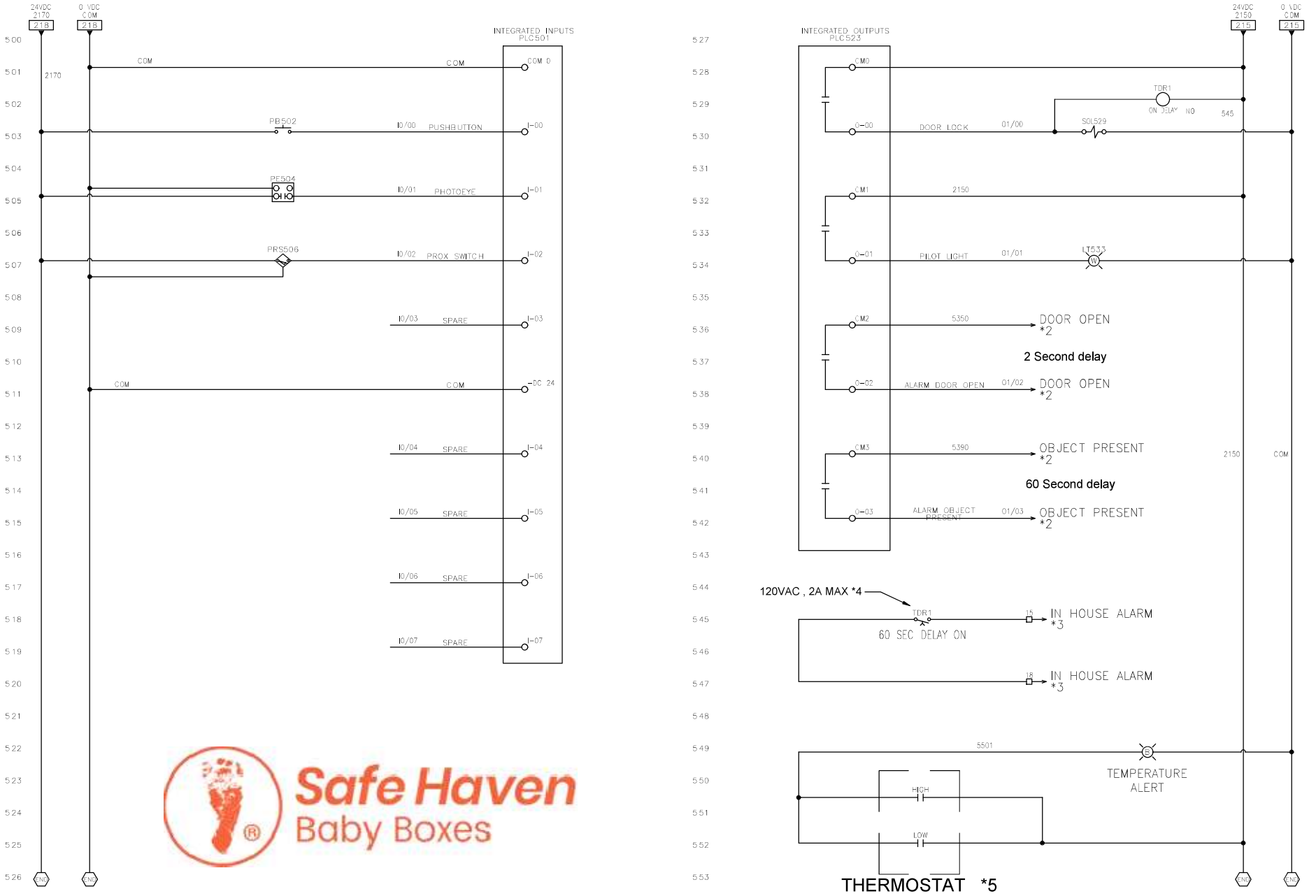
   4.1. **WARNING** - SEPARATE VOLTAGE ORIGINATING FROM DIFFERENT SOURCE. WILL NOT DE-ENERGIZE WHEN POWER IS DISCONNECTED FROM BABY BOX

5. *ADJUSTABLE THERMOSTAT FOR HIGH AND LOW TEMPERATURE ALERT SETTING

DWG FILE : SAVE-HAVEN-BABY_BOX-E2.DWG
DATE : 04-22-25
PLOT TIME : 23:10

CONTROLS CONTRACTING GROUP
10523 MAIN STREET
LEO, IN. 46765
PHONE: (260) 368-5354
WWW.CONTROLSCONTRACTINGGROUP.COM

SCALE: 5



Safe Haven
Baby Boxes

DWG FILE : SAVE-HAVEN-BABY_BOX-E5.DWG
DATE : 04-22-25
PLOT TIME : 23:10

CONTROLS CONTRACTING GROUP
10523 MAIN STREET
LEO, IN. 46765
PHONE: (260) 368-5354
WWW.CONTROLSCONTRACTINGGROUP.COM

Electrical Requirements:

A dedicated circuit, 120 volts, 15 amps, is recommended for the Baby Box. The full load amperage of the Baby Box is 5 amps.

A power cord is attached to each Baby Box and can be plugged into a standard grounded receptacle, NEMA 5-15R.

If the power cord needs to be removed for installation of the Baby Box into the wall, it can be disconnected from the terminals located under the floor of the box. The terminal numbers are 2030, N, GRD. These terminals are located on the right side of the electrical strip.

Monitoring of The Alarm Circuits:

There are 3 alarm contacts for each Baby Box. They are labeled as follows: POWER OFF, DOOR OPEN, OBJECT PRESENT. The monitoring shall be done from a remote location. The power for the alarms should not be the same power that powers the Baby Box. The circuitry is not designed to handle the extra load.

All 3 alarm contacts are normally open with no power present.
The **POWER OFF** contact closes immediately upon power loss.
The **DOOR OPEN** contact closes 2 seconds after the door is opened.
The **OBJECT PRESENT** contact closes 60 seconds after the photo eye is blocked.

The alarm terminals are located in the middle of the electrical strip.

The alarm should be set up to have zero human error. When the baby box alarm activates, as soon as baby is pulled from the baby box, the alarm needs to automatically reset itself. This eliminates human error from forgetting to reset the baby box.

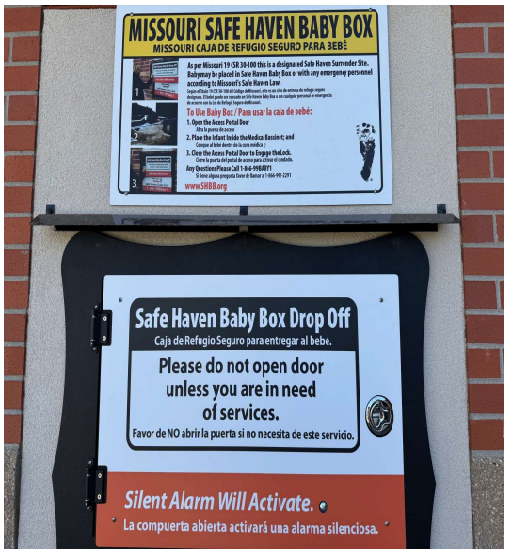
Any questions contact Rick@SafeHavenBabyBoxes.com or at 888-742-2133

Installation of Rain Guard

Installation of stainless-steel rain guard should be done after installation. Please see Pics below.







Updated March 2025

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SECTION 12 24 00
WINDOW SHADES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Window Shades.

1.02 RELATED REQUIREMENTS

A. Reference Section 06 10 53 - Miscellaneous Rough Carpentty for additional Content

1.03 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY"

A. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

B. C2C (DIR) - C2C Certified Products Registry; Cradle to Cradle Products Innovation Institute; Current Edition.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

D. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2023, with Errata.

E. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

F. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

G. WCMA A100.1 - Standard for Safety of Window Covering Products; 2022.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Wherever motorized shades are scheduled to be controlled by control systems, provided under other Sections, coordinate said Work with appropriate Trades, as required to provide compatible Products, complete installation, this particular Project.
   2. Fully coordinate Work with all other Trades, as required to provide rough in of electrical wiring, for installation of all hard wired, motorized shades.
   3. Wherever motorized shades are scheduled, **provide only plenum rated cable**, all motor control wiring.

B. Preinstallation Meeting: Convene (14) Fourteen calendar days prior to begining any Work, this Section.

C. Sequencing:
   1. Do not fabricate any Work, this Section, until all feld dimensions have been verified, coordinated accordingly.
   2. Do not install any Work, this Section, until all final surface finishes have been completed.

1.05 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Provide Manufacturer's thoroughly detailed catalog pages, data sheets, including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories, particular to this Project.
   1. Motorized Shades: Include all power requirements, thoroughly detailed wiring diagrams, all Products, particular to this Project.

C. Shop Drawings: Include thoroughly detailed shade schedule, details, mounting dimensions and operation direction, all Work, this Section, particular to this Project.
   1. Motorized Shades: Provide thoroughly schematic system riser diagram indicating component interconnections. Include requirements for interface with all other systems, particular to this Project.

D. Certificates: Manufacturer's thoroughly detailed written documentation, confirmation that all line voltage components are UL listed.

E. Source Quality Control Submittals: Provide Test Reports verifying compliance with all specified fabric properties, this particular Project.

F. Product Samples: Provide (2) Two Product Samples, Manufacturer's standard size, each Product delineated within Contract Documents, as required to accurately represent , construction, color, sheen and pattern.

G. Manufacturer's Instructions: Include Manufacturer's detailed written instructions for storage, handling, protection, examination, preparation, and installation of all Work, this Section.

H. Project Record Documents: Record actual locations of control systems, this particular Project, show all interconnecting wiring.

I. Operation and Maintenance Data: List of all components with part numbers, sources of supply, operation, copy of Shop Drawings and all maintenance instructions.

J. Warranty: Manufacturer's (20)Twenty Year Warranty, completed within Owner's name and registered with said Manufacturer.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Work, this Section, minimum (15) Fifteen Years documented experience.

B. Installer Qualifications: Company specializing in Work, this Section, minimum (15) Fifteen Years documented experience.
   1. Manufacturer's Authorized representative.
   2. Factory training, demonstrated experience.

C. Product Listing Organization Qualifications: Organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to Owner, those Local Aauthorities having Jurisdiction.

1.07 MOCK UP

A. Mock Up: Provide, install full sized mock up, Work this Section, complete with previously selected shade fabric including example of seams and batten pockets.
   1. Obtain Architect's review, approval of light, privacy characteristics, fabric prior to fabrication.
   2. Full sized mock up will become the property of Owner.
   3. **Mock Up may not remain as portion of permanent Work, this particular Project.**

1.08 DELIVERY, STORAGE, HANDLING

A. Deliver all shades within Manufacturer's unopened packaging, labeled, as required to identify each shade, each opening.

B. Handle and store all shades in full accordance with Manufacturer's recommendations.

1.09 FIELD CONDITIONS

A. **Do not** install any Work, this Section, under any environmental conditions outside Manufacturer's limits.

1.10 WARRANTY

A. Reference Section 01 78 00 - Closeout Submittals for additional Content.

B. Provide Manufacturer's (20) Twenty Year Warranty, all Work this Section.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Interior Manually Operated Window Shades: "As delineated within Contract Documents".
   1. Draper, Inc; Clutch Operated FlexShade: www.draperinc.com.

2. Hunter Douglas Architectural; RB500 Manual Roller Shades: www.hunterdouglasarchitectural.com.
3. Levolor: www.commercial.levolor.com.
4. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.

2.02 ROLLER SHADES

A. General:
1. Provide shade system components that are easy to remove, adjust without removal of mounted shade brackets.
2. Provide shade system that operates smoothly.
3. Provide shade system that is fully certified, listed within C2C (DIR).
4. Interior Motorized Window Shades: "As delineated within Contract Documents" Motor system housed inside roller tube, controlling shade movement via motor controls indicated; listed or recognized to UL 325.
   a. Fully comply with NFPA 70.
   b. Electrical Components: Listed, classified, and labeled as suitable for the purpose intended. All system components shall be FCC compliant.
   c. Motors: Size and configuration as recommended by Manufacturer for the type, size, and arrangement, particular to this Project.
   d. Audible Noise: Measured (2) Two Feet from unit, with no audible clicks, with motor in operation.

B. Window Shades:
1. Basis of Design: (Mecho Shade Systems; www.mechoshade.com).
2. Description - Interior Window Shades: Single roller, manually operated fabric window shade system complete with mounting brackets, roller tubes, hembars, hardware and accessories, particular to this Project.
   a. Drop Position: Regular roll.
   b. Roll Direction: Bottom up, closed position, top of window opening.
   c. Size: As delineated within Contract Documents.
   d. Fabric: As selected by Architect from Manufacturer's full line of options.
3. Brackets, Mounting Hardware: As recommended by Manufacturer for mounting indicated and as required to accommodate shade fabric size, weight, this particular Project.
   a. Material: Stamped steel.
4. Roller Tubes: As required for type of shade operation.
   a. Material: Extruded aluminum, finish as selected by Architect from Manufacturer's full line of options.
   b. Size: As recommended by Manufacturer; selected for suitability, installation conditions, span, and weight of shades, this particular Project.
   c. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge.
   d. Take Up Roller: Manufacturer's standard roller tube pretensioned for winding lift cable.
5. Hembars: Designed to maintain bottom of shade straight and flat.
   a. Style: Exposed aluminum bottom bar, flat profile with closed ends; finish as selected by Architect from Manufacturer's full range of options.
   b. Style: Full wrap fabric covered bottom bar, flat profile with heat sealed closed ends.
6. Manual Operation for Interior Shades:
   a. Clutch Operator: Manufacturer's standard, this particular Project, permanently lubricated.
   b. Drive Chain: Continuous loop, beaded ball chain with restraining device, (115) One Hundred Fifteen pound minimum breaking strength; fully comply with WCMA A100.1. Provide upper and lower limit stops.

c. Shade Lift Assistance: Manufacturer's standard device, particular to this Project, contained within idler end of roller tube, as required to reduce force required to lift shades; based on shade weight.
d. Chain Retainer:
1) Chain tensioning device fully complying with WCMA A100.1.
2) Manufacturer's clip, particular to this Project.

2.03 SHADE FABRIC

A. Fabric: Nonflammable, color fast, impervious to heat, moisture and able to fully retain shape under normal operation.
1. Manufacturers:
a. Shade fabric as delineated within Contract Documents.
b. MechoShade Systems L.L.C.: www.mechoshade.com.
c. Mermet Corporation: www.mermetusa.com.
d. Phifer, Inc.: www.phifer.com.
e. Substitutions: Reference Section 01 60 00 - Product Requirements for additional Content.
2. Material Certificates and Product Disclosures:
a. Low Emitting Material Certification: Greenguard Gold certified and listed in UL (GGG).
b. Material Health Certificate: Achievement level of Bronze.
c. Health Product Declaration (HPD): Complete, published declaration with full disclosure of known hazards.
d. Declare label.
3. Performance Requirements:
a. Flammability: Pass NFPA 701.
b. Fungal Resistance: No growth when tested according to ASTM G21.
c. Solar Transmittance:
d. Visible Light Transmittance:
e. Solar Absorption:
f. Solar Reflectance:
4. Color: As selected by Architect from Manufacturer’s full range of options.
5. Fabrication:
a. Fabric Orientation: Railroaded, fabric turned 90 degrees off roll.
b. If height of opening requires multiple panels of railroaded fabric, use battens at seams.
c. Battens: Full width of shade, enclose within welded shade fabric pocket.

2.04 ROLLER SHADE FABRICATION

A. Field measure all finished openings prior to ordering, fabrication.

B. Dimensional Tolerances: Fabricate shades to fit openings, this particular Project.
1. Vertical Dimensions: Fill openings from head to sill with 1/4 inch space between bottom bar and window sill.
2. Horizontal Dimensions, Inside Mounting: Fill openings from jamb to jamb.

C. Dimensional Tolerances: As recommended in writing by Manufacturer, this particular Project.

D. At openings requiring continuous multiple shade units with separate rollers, locate roller joints centered upon window mullion centers; butt rollers end to end.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Examine all** finished openings for any deficiencies that may preclude satisfactory installation.

B. If substrate preparation is the responsibility of another installer, notify Architect, immediately of any unsatisfactory preparation, prior to beginning any Work, this Section.

C. **Start of installation shall represent acceptance of all substrates.**

3.02 PREPARATION

A. **Prepare all surfaces** using only those methods recommended, in writing, by Manufacturer for achieving best results, this particular Project.

B. **Fully coordinate** with window installation, placement of all concealed blocking, as required to adequately support shades.

3.03 INSTALLATION

A. Install in full accordance with Manufacturer's instructions and previously approved shop drawings, **using only** those mounting devices as indicated.

B. **Replace all** shades that exceed any tolerances delineated within Contract Documents.

C. Adjust level, all shades centering from mounting bracket. **Verify no** telescoping of shade fabric. Ensure smooth shade operation.

3.04 SYSTEM START UP

A. Motorized Shade Systems: Provide services of a Manufacturer's authorized representative to perform system startup.

3.05 CLEANING

A. **Thoroughly clean** all Work, this Section.

B. **Replace all** Work, this Section, that cannot be cleaned to "like new" condition.

C. ReferenceSection 01 74 19 - Construction Wase Mnagement and Disposal for additional Content.

3.06 CLOSEOUT ACTIVITIES

A. Reference Section 01 78 00 - Closeout Submitttals for additional Content.

B. Demonstration: Demonstrate operation, maintenance, all Work, this Section, for Owner's Representatives.

C. Training: Thoroughly train Owner's Representates, operation and maintenance, all Work, this Section.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required, this particular Project.
   2. Provide minimum (90) Ninety minutes of training by Manufacturer's authorized personnel, date and time as directed by Owner's Represntatives.

3.07 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 12 32 00
MANUFACTURED WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufactured Wood Caseword.

1.02 RELATED REQUIREMENTS

A. Section 12 36 00 - Countertops.

1.03 DEFINITIONS

A. Exposed: Portions of casework visible when drawers and cabinet doors are closed, including end panels, bottoms of cases more than 42 inches above finished floor, tops of cases less than 72 inches above finished floor and all members visible in open cases or behind glass doors.

B. Semi Exposed: Portions of casework and surfaces behind solid doors, tops of cases more than 72 inches above finished floor and bottoms of cabinets more than 30 inches but less than 42 inches above finished floor.

C. Concealed: Sleepers, web frames, dust panels and other surfaces not generally visible after installation and cabinets less than 30 inches above finished floor.

1.04 REFERENCE STANDARDS; " USE CURRENT EDITION, ONLY "

A. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

B. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

D. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

E. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2024, with Editorial Revision (2025).

F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026.

G. AWI (QCP) - Quality Certification Program; Current Edition.

H. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

I. AWMAC (GIS) - Guarantee and Inspection Services Program; Current Edition.

J. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

K. BHMA A156.9 - Cabinet Hardware; 2020.

L. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

M. IAPMO Z124 - Plastic Plumbing Fixtures; 2022, with Editorial Revision.

N. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.

O. MIA (DSDM) - Dimensional Stone Design Manual, Version VIII; 2016.

P. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

Q. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

R. WI (CCP) - Certified Compliance Program (CCP); Current Edition.

S. WI (CSIP) - Certified Seismic Installation Program (CSIP); Current Edition.

T. WI (MCP) - Monitored Compliance Program (MCP); Current Edition.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct preinstallation meeting (10) Ten business days prior to start of the Work, this Section; require mandatory attendance, all affected installers.

B. Keying Conference: Conduct conference prior to ordering keys. Incorporate conference decisions into keying submittal.

1.06 SUBMITTALS

A. Reference Section 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Component dimensions, configurations, construction details, joint details, attachments.

C. Shop Drawings: Indicate casework types, sizes, and locations, using large scale plans, elevations, and cross sections. Include rough-in and anchors and reinforcements, placement dimensions and tolerances, clearances required, and keying information.

D. Maintenance Data: Manufacturer's recommendations for care and cleaning.

E. Finish touch up kit for each type and color of materials provided.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in Manufacturing Products specified within this section, minimum (10) Ten Years documented experience.

B. Installer Qualifications: Company specializing in performing Work, type specified within this Section, minimu (15) Fifteen Years documented experience.

1.08 DELIVERY, STORAGE, HANDLING

A. Protect all Products provided via this Section, including all finished surfaces and hardware items, during handling and installation. For all metal surfaces, use polyethylene film, as directed by Manufacturer.

B. Acceptance at Site:
   1. Do not deliver or install casework until the conditions specified under Part 3, Examination Article of this section have been met. Products delivered to sites that are not enclosed and/or improperly conditioned will not be accepted if warping or damage due to unsatisfactory conditions occurs.

C. Storage:
   1. Store casework in the area of installation. If necessary, prior to installation, temporarily store in another area, meeting the environmental requirements specified under Part 3, "Site Verification of Conditions" Article of this section.

PART 2 PRODUCTS

2.01 CASEWORK, GENERAL

A. Quality Standard: AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Plastic Laminate Faced Cabinets: Custom Grade.

2.02 FABRICATION

A. Assembly: Shop assemble casework items for delivery to site in units easily handled and to permit passage through building openings.

B. Construction: As required for selected grade.

C. Structural Performance: Safely support the following minimum loads:
   1. Base Units: 500 pounds per linear foot across the cabinet ends.
   2. Suspended Units: 300 pounds static load.
   3. Drawers: 125 pounds, minimum.
   4. Hanging Wall Cases: 300 pounds.
   5. Shelves: 100 pounds, minimum.

D. Seismic Performance: Casework, including attachments to other work, able to withstand the effects of earthquake motions determined according to ASCE/SEI 7.
   1. Component Importance Factor: 1.0.

E. Fittings and Fixture Locations: Cut and drill components for fittings and fixtures.

F. Hardware Application: Factory-machine casework members for hardware that is not surface applied.

G. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.

H. Scribes and Fillers: Panels of matching construction and finish, for locations where cabinets do not fit tight to adjacent construction.

2.03 PLASTIC LAMINATE CLAD CASEWORK

A. Plastic Laminate Clad Casework: Solid wood and wood panel construction; each unit self-contained and not dependent on adjacent units or building structure for rigidity; in sizes necessary to avoid field cutting except for scribes and filler panels. Include adjustable levelers for base cabinets.
   1. Style: Flush overlay. Ease doors and drawer fronts slightly at edges.
   2. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline.
      a. Surface Color and Pattern: As selected by Architect from Manufacturer's full range of options.

2.04 COUNTERTOPS

A. Reference Section 12 36 00 - Countertops for additional Content.

2.05 CABINET HARDWARE

A. Fully comply with BHMA A156.9 requirements.

B. Drawers: Pulls and slides.
   1. Pulls: As delineated within Contract Documents.
   2. Pulls: Chrome wire pulls, 4 inches wide.
   3. Slides: Steel, full extension arms, ball bearings; self-closing; capacity as recommended by manufacturer for drawer height and width.

2.06 MATERIALS

A. Wood Based Materials:
   1. Solid Wood: Air-dried to 4.5 percent moisture content, then tempered to 6 percent moisture content before use.
   2. Composite Wood Panels: Containing no urea-formaldehyde resin binders.

B. Hardwood Plywood: Veneer core; HPVA HP-1 Grade as indicated; same species as exposed solid wood, clear, compatible grain and color, no defects. Band exposed edges with solid wood of same species as veneer.

C. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications. complying with Grade requirements, and standard with the manufacturer.

D. Phenolic Panels: Monolithic core of phenolic resin reinforced with cellulose fibers and manufactured under high pressure and at high temperatures, with melamine-impregnated decorative surface papers; NEMA LD 3 Compact Laminate, Grade CGS.

2.07 ACCESSORIES

A. Plastic Edge Banding: Extruded PVC, flat shaped; smooth finish; self locking serrated tongue; of width to match component thickness.
   1. Color: As selected by Architect form Manufacturer's full range of options

B. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.

C. Concealed Joint Fasteners: Corrosion resistant, standard with Manufacturer.

D. Sealant for Use in Casework Installation:
   1. Manufacturer's recommended type.

PART 3 EXECUTION

3.01 PREPARATION

A. Large Components: Ensure that large components can be moved into final position without damage to other construction.

3.02 EXAMINATION

A. Site Verification of Environmental Conditions:
   1. Do not deliver casework until the following conditions have been met:
      a. Building has been enclosed (windows and doors sealed and weather-tight).
      b. An operational HVAC system that maintains temperature and humidity at occupancy levels has been put in place.
      c. Ceiling, overhead ductwork, piping, and lighting have been installed.
      d. Installation areas do not require further “wet work” construction.

B. Verify all support framing and anchors.

C. Confirm all service connections are correctly located and of proper characteristics.

3.03 INSTALLATION

A. Perform installation in full accordance with Manufacturer's written instructions.

B. Use anchoring devices to suit conditions and substrate materials encountered. Use concealed fasteners to the greatest degree possible. Use exposed fasteners only where allowed by approved shop drawings, or where concealed fasteners are impracticable.

C. Set casework items plumb and square, securely anchored to building structure.

D. Align cabinets to adjoining components, install filler and/or scribe panels where necessary to close gaps.

E. Fasten together cabinets in continuous runs, with joints flush, uniform and tight. Misalignment of adjacent units not to exceed 1/16 inch. In addition, do not exceed the following tolerances:
   1. Variation of Tops of Base Cabinets from Level: 1/16 inch in 10 feet.
   2. Variation of Faces of Cabinets from a True Plane: 1/8 inch in 10 feet.
   3. Variation of Adjacent Surfaces from a True Plane (Lippage): 1/32 inch.
   4. Variation in Alignment of Adjacent Door and Drawer Edges: 1/16 inch.

F. Base Cabinets: Fasten cabinets to service space framing and/or wall substrates, with fasteners spaced not more than 16 inches on center. Bolt adjacent cabinets together with joints flush, tight, and uniform.

G. Wall Cabinets: Fasten to hanging strips, and/or wall substrates. Fasten each cabinet through back, near top, at not less than 16 inches on center.

H. Install hardware uniformly and precisely.

I. Countertops: Install countertops intended and furnished for field installation in one true plane, with ends abutting at hairline joints, and no raised edges.

J. Replace units that are damaged, including those that have damaged finishes.

3.04 ADJUSTING

A. Adjust all Work, this Section, as required for smooth operation

3.05 CLEANING

A. Thoroughly clean all Work, this Section.

3.06 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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SECTION 12 36 00
COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops.

1.02 REFERENCE STANDARDS; "USE CURRENT EDITION, ONLY "...

A. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2019.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2025.

C. AWI (QCP) - Quality Certification Program; Current Edition.

D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

E. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

F. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material; 2013.

G. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

H. NSI (DSDM) - Dimensional Stone Design Manual, Version VIII; 2016.

I. PS 1 - Structural Plywood; 2023.

J. WI (CCP) - Certified Compliance Program (CCP); Current Edition.

1.03 SUBMITTALS

A. ReferenceSection 01 30 00 - Administrative Requirements for additional Content.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.

C. Shop Drawings: Provide thoroughly detailed Submittal, particular to this Project.

D. Product Samples: Submit (2) Two Product Samples, Manufacturer's standard size, each finish product specified, as required to accurately illustrate construction, product, hardware, color, finish & pattern.

E. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

G. Installation Instructions: Manufacturer's installation instructions and recommendations.

H. Maintenance Data: Manufacturer's detailed written instructions, recommendations for maintenance, repair of countertop surfaces.

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Natural Stone Institute (NSI) Accredited Natural Stone Fabricator; www.naturalstoneinstitute.org/#sle.

B. Installer Qualifications: Company specializing in performing Work of type specified within this Section, minimum (15) Fifteen Years documented experience.

C. Quality Certification:
   1. Fully comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
      a. This AWI (QCP) project is registered.

2. Comply with WI (CCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.woodworkinstitute.com/#sle.
3. Provide labels or certificates indicating that the installed work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
4. Provide designated labels on shop drawings as required by certification program.
5. Provide designated labels on installed products as required by certification program.
6. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.05 DELIVERY, STORAGE, HANDLING

A. Store all Products within Manufacturer's unopened packaging, until ready for installation.

B. Store and dispose of all solvent based materials, any materials used with solvent based materials, in full accordance with those requirements of Local Authorities having Jurisdiction.

1.06 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. **Do not** install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Quality Standard: Custom Grade, in full accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless directed otherwise by Architect.

B. Natural Quartz and Resin Composite Countertops: Sheet or slab of natural quartz and plastic resin over continuous substrate.
1. Flat Sheet Thickness: 1-1/4 inch, minimum.
2. Natural Quartz and Resin Composite Sheets, Slabs and Castings: Complying with ISFA 3-01 and NEMA LD 3; orthophthalic polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard stone fabrication tools; no surface coating; color and pattern consistent throughout thickness.
   a. Manufacturers:
      1) As outlined within Contract Documents.
   b. Factory fabricate all components to greatest extent practical, within those sizes, shapes indicated; fully comply with NSI (DSDM).
   c. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in full accordance with ASTM E84.
   d. Finish on Exposed Surfaces: As directed by Architect.
   e. Color and Pattern: As selected by Architect from Manufacturer's entire range of options.
3. All other Components Thickness: 3/4 inch, minimum.
4. Back and End Splashes: Same sheet material, square top; minimum 4 inches high.
5. Skirts: As delineated within Contract Documents.

2.02 MATERIALS

A. Extruded Aluminum: ASTM B211/B211M, 6463 alloy, T5 temper.

B. Plywood for Supporting Substrate: PS 1 Exterior Grade, "A C" veneer grade, minimum 5-ply; 3/4 inch thick; join lengths using metal splines.

C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 ACCESSORIES

A. Fixed Top Mounted Countertop Support Brackets:

2.04 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
      a. Rout a 1/8 inch drip groove at underside of exposed overlapping edges, set back 1/2 inch from face of edge.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back, end splash wherever counter edge abuts vertical surface, unless directed otherwise by Architect.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 4 inches, unless directed otherwise by Architect.

C. Solid Surfacing: Fabricate tops and wall panels up to 144 inches long within a single piece; join pieces with adhesive sealant in accordance with Manufacturer's recommendations and instructions.
   1. Integral sinks: Shop mount securely to countertop with adhesives, using flush configuration, as per manufacturer's instructions, and as detailed on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. **Do not** start any Work, this Section, until alll substrates have been properly prepared.

B. If substrate preparation is responsibility of another installer, notify Architect immediately, of any unsatisfactory preparation, before proceeding.

C. Verify all wall surfaces have been finished, mechanical, electrical and plumbing services have been properly placed, prior to commencing any Work of this Section..

3.02 PREPARATION

A. Thoroughly clean all surfaces, prior to beginning any Work, this Section.

B. Prepare all surfaces using only those methods recommended by Manufacturer for achieving best result for substrate, this particular Project.

3.03 INSTALLATION

A. Securely attach all countertops, using only concealed fasteners. Make all flat surfaces level; shim as required.

B. Seal tight all joints between back, end splashes, vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/16 inch in (8) Eight feet, maximum.

B. Offset From Wall, Countertops: 1/16 inch maximum.

C. Field Joints: 1/16 inch wide, maximum.

3.05 CLEANING

A. Thoroughly clean, all Work, this Section.

3.06 PROTECTION

A. **Protect all Work, this Section, from Damage.**

B. **Replace all Damaged Work, this Section, immediately.**

END OF SECTION

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