

Project Specifications

Volume 1

Project Number: 21412000

JUNE 6, 2023

BID DOCUMENTS

**JOHNSON COUNTY ADMINISTRATION AND
HEALTH & HUMAN SERVICES BUILDINGS
REMODELING PROJECT
IOWA CITY, IOWA**



ARCHITECTS

INCORPORATED

24-1/2 S. CLINTON STREET

SUITE 1

IOWA CITY, IOWA 52240

(319) 248-5667

SECTION 00 01 07 – SEALS AND SIGNATURES

.....

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly licensed Architect under the laws of the State of Iowa.

Signature Date

Printed or typed name Justin P. Bishop

Iowa license number 06497

My license renewal date is June 30, 2024 _____

Pages or sheets covered by this seal: _____

Divisions 0-14*

*except those listed under other seals

Discipline: Architecture

.....

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly licensed Professional Landscape Architect under the laws of the State of Iowa.

Signature Date

Printed or typed name Brent W. Jackman

Iowa license number 18193

My license renewal date is June 30, 2024 _____

Pages or sheets covered by this seal: _____

*Division 31, 32 & 33

*except those listed under other seals

Discipline: Civil

.....

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature _____ Date _____

Printed or typed name Bradley C. Hill

Iowa license number 19593

My license renewal date is December 31, 2024 _____

Pages or sheets covered by this seal: _____

033000, 042000, 051200, 053100, 055000, 316600

Discipline: Structural

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature _____ Date _____

Printed or typed name Dwight Clopton Schumm

Iowa license number 13694

My license renewal date is December 31, 2023 _____

Pages or sheets covered by this seal: _____

Divisions 21, 22, 23, 26, 27, 28

Discipline: Mechanical/Plumbing/Electrical/Technology

END OF SECTION

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**SECTION 00 11 13
ADVERTISEMENT FOR BIDS**

FROM:

THE OWNER (HEREINAFTER REFERRED TO AS OWNER):

Johnson County, Iowa
913 S Dubuque St, Iowa City, IA 52240

AND THE ARCHITECT (HEREINAFTER REFERRED TO AS ARCHITECT):

OPN Architects, Inc.
24-1/2 South Clinton Street, Suite 1, Iowa City, Iowa 52240

TO: POTENTIAL BIDDERS

- A. On behalf of Johnson County, sealed bids will be received at the Auditor's Office, Johnson County Administration Building 913 S Dubuque St. Iowa City IA 52240 until 2:00 p.m. local time on Thursday, July 13th, 2023. Bids received after that time will not be accepted.

**JOHNSON COUNTY ADMINISTRATION AND HEALTH & HUMAN SERVICES BUILDINGS
REMODELING PROJECT**

IOWA CITY, IOWA

Project No. 21412000

- B. Bids will be opened and read aloud immediately after the specified closing time in the Betty Sass Conference Room on level one of the Administration Building.
- C. The bids are for a single Prime Contract (civil, general, mechanical and electrical combined) for a phased renovation of the Administration and Health and Human Services buildings. Phase 0 will include the partial renovation of the third level of the Health and Human Services building to serve as an employee swing space. Phase 1 will include renovation of level one and level two of the Administration Building and ADA site improvements. Phase 2 will include partial build out of level three of the Health and Human Services Building. Bids shall be on a lump sum basis; segregated sub-bids will not be accepted.
1. Estimated Construction Cost: \$8,716, 341.
- D. Award of Contract is anticipated to commence no earlier than Thursday July 20th, 2023. Work may begin immediately following execution of the agreement and is scheduled in three phases as shown on the Contract Documents. Start and completion dates for each phase are as follows:
1. Phase 0: HHS L3 Temp Space: August 1, 2023 thru October 23, 2023.
 2. Phase 1: Administration Building Renovation and Sitework: November 13, 2023 thru July 16, 2024
 3. Phase 2: HHS L3 Buildout: July 31, 2024 thru January 29, 2025.
- E. A pre-bid conference is scheduled for Tuesday, June 20th, 2023 at 10 a.m. in the 1st Floor (Betty Sass) Conference Room at the Johnson County Administration Building, 913 S Dubuque St. Iowa City IA 52240
- F. Bidders and Sub-bidders requiring interpretation of the bidding documents or substitution requests are required to make a written request to the Architect by 5:00 p.m. local time on Tuesday June 27th. Clarifications or modifications of the Bid Documents will be addressed via Addendum by 5:00 p.m. Friday, June 30th.
1. Direct all correspondence to: Zack Writer, zwriter@opnarchitects.com
- G. Bidders for the Contract may obtain copies of the Bidding Documents by contacting Rapids Reproductions, Cedar Rapids, IA, Ph. 319-364-2473 in accordance with the Instructions to Bidders upon depositing the sum of \$200 (written to OPN Architects), or a valid MBI Plan

Deposit card issued for the current year, for each set of documents.

1. If applicable, contractors and sub-bidders shall pay printing company for associated shipping cost.
 2. The deposit will be refunded to Bidders who return the Bidding Documents in good condition within fourteen days after award of project. The cost of replacement of missing or damaged documents will be deducted from the deposit.
 3. A Bidder receiving a Contract award may retain the Bidding Documents and the Bidder's deposit will be refunded.
 4. Documents are also available to view digitally on Rapids Reproductions online Public Plan Room.
- H. Paper documents may be viewed at the following plan rooms of locations:
1. Dodge Data & Analytics Planroom, 3315 Central Ave, Hot Springs, AR 71913, 501-625-3544
 2. Des Moines Construction Update Plan Room DM, 221 Park Street, Des Moines, IA
 3. Auditor's Office, Johnson County Administration Building 913 S Dubuque St. Iowa City IA 52240
- I. Documents may also be viewed digitally at the following organization's online plan rooms or websites:
1. Bid+Builders Exchange, 4814 E. Broadway, Madison, WI, 608-221-3148
 2. Minnesota Builders Exchange, 1123 Glenwood Avenue, Minneapolis, MN, 612-381-2647.
 3. Omaha Builders Exchange, 4159 S. 94th, Omaha, NE, 402-991-6906.
 4. Johnson County: <https://www.johnsoncountyiowa.gov/bids-and-proposals>
- J. Bid security in the amount of 5% of the total bid in the form of certified check, credit union share draft, or surety bond written on an original AIA Document A310, Bid Bond, is required for this project at the time of Bid. The successful bidder will be required to provide surety Performance and Payment Bonds in an amount equal to one hundred percent (100%) of the Contract Sum.
- K. Iowa Code section 73A.21 provides for a Reciprocal Resident Bidder and Labor Force preference. Because of the nature of this project (i.e. Federal-aid participation and 2 CFR 200.319(c), which prohibits the use of statutorily imposed state or local geographical preferences in the evaluation of bids or proposals), the Reciprocal Resident Bidder and Labor Force preference, shall not apply to this project.
- L. The award of the contract may be made by Johnson County, Iowa to any responsible bidder or bidders offering suitable supplies, equipment and/or service at the lowest price taking into consideration the quality of materials or service in the best interest of the Owner, and otherwise responsive to the Bidding Documents. The right is reserved to reject any and all bids, or any part thereof, and to waive informalities, and to enter into such contract or contracts as shall be deemed in the best interest of the Owner.
- M. By virtue of statutory authority, preference will be given to products and provisions grown and coal produced within the State of Iowa.

END OF SECTION

**SECTION 00 21 13
INSTRUCTIONS TO BIDDERS**

American Institute of Architects Document A701 - 2018, Instructions to Bidders, is hereby incorporated in this specification by reference and is available from the Architect: OPN Architects, Inc., 200 Fifth Avenue SE, Suite 201, Cedar Rapids, Iowa 52401. The Instructions to Bidders, including modifications and special instructions, shall apply to all Bidders and Sub-Bidders.

END OF SECTION 00 21 13

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**SECTION 00 22 13
SUPPLEMENTARY INSTRUCTIONS TO BIDDERS**

The following supplements modify, change, delete from or add to the "Instructions to Bidders", AIA Document A701, 2018 Edition. Where any Article of the Instructions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

ARTICLE 3: BIDDING DOCUMENTS

1. Paragraph 3.2 Modification or Interpretation of Bidding Documents

A. Sub-paragraph 3.2.2; replace with the following:

.1 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writer and shall be received by the Architect at least fourteen days prior to the date for receipt of Bids.

.2 An ambiguity, inconsistency, or error discovered too late to be clarified or interpreted by Addendum shall be handled in the following manner:

.1 The Bidder or Sub-bidder shall promptly notify the Architect.

.2 The Bidder or Sub-bidder shall determine, to the best of his ability, the proper methods or materials required to fulfill the design intent of the Architect and shall include the cost of providing such methods or materials in this Bid or Sub-bid.

.3 The Bidder or Sub-bidder shall submit with the Bid, as supplemental information, descriptions of the ambiguity, inconsistency, or error and the methods or materials which he has included in the Bid.

.4 The Owner, Construction Manager and Architect will review the supplemental information prior to awarding the Contract."

2. Paragraph 3.3 Substitutions

A. Sub-paragraph 3.3.2; replace with the following:

.1 Written requests for substitutions shall be received by the Architect at least fourteen 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 3.22.

.2 All substitution requests shall be submitted on the Substitution Request Form included in the Project Specification Manual. All substitution requests submitted must be complete with all requested information. Incomplete forms and requests submitted on other forms shall be disregarded."

3. Paragraph 3.4 Addenda

A. Paragraph 3.4.3; add the following to the end of paragraph:

".....or in a case deemed an emergency by the Architect or Owner."

ARTICLE 4: BIDDING PROCEDURES

1. Paragraph 4.1 Preparation of Bids

A. Sub-paragraph 4.1.1; add the following sentence:

1. "Bidders shall include an original copy of the Bid in the submittal envelope."

2. Paragraph 4.2 Bid Security

A. Sub-paragraph 4.2.1; add the following:

"4.2.1.1 Bid Security in the amount of 5% of the Bid shall be presented as:

- .1 A certified check on a solvent Iowa bank, made payable to the Owner; or,
- .2 A surety bond from a surety company authorized to do business in the state of Iowa; or
- .3 A certified share draft on a solvent Iowa credit union, made payable to the Owner."

B. Sub-paragraph 4.2.4; revise final sentence as follows:

1. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning 30 days after the opening of Bids, withdraw its Bid and request the return of its bid security."

3. Paragraph 4.3 Submission of Bids

A. Sub-paragraph 4.3.1; delete this paragraph and add the following:

"4.3.1 Bids, required submittals, and supplementary information shall be presented in sealed opaque envelope identified with the Project title, the Bidder's name, and a list of the contents. The contents of the envelope shall be as follows:

- .2 Envelope shall contain the Bid Security and supplemental information offered by the Bidder.

Envelope shall be sealed in a mailing envelope addressed to the party receiving the Bids and 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. The mailing envelope shall be noted "SEALED BID ENCLOSED".

B. Sub-paragraph 4.3.6; add the following:

"4.3.6 Bids shall remain in force and effect for thirty (30) days after opening of the Bid.

4. Paragraph 4.4 Modification or Withdrawal of Bid

A. Sub-paragraph 4.4.3; add the following:

"4.4.3.1 At the Owner's discretion, If the withdrawn bid is the low bid, the Owner will retain a portion of the bid security equal to the difference between the low bid and the next-lowest bid. This amount of the bid security shall be forfeited to the Owner as a measure of liquidated damages which the Owner will sustain resulting from failure, neglect, or refusal of the Bidder to deliver a signed contract stipulating the scope and performance of the Work as defined in the Bid Documents. Contract will include unqualified compliance with the Contract Documents as bid and must be executed within fourteen (14) calendar days after the notification of award is issued."

ARTICLE 6: POST-BID INFORMATION

Sub-paragraph 6.3.1; delete "as soon as practicable or as stipulated in the Bidding Documents" and insert "within three (3) business days."

ARTICLE 7: PERFORMANCE BOND AND PAYMENT BOND

1. Paragraph 7.1 Bond Requirements

A. Sub-paragraph 7.1.1; delete this paragraph and add the following:

"7.1.1 The Bidder shall furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder in an amount equal to the total Contract Sum. Bonds may be secured through the Bidder's usual sources. The cost of the Bonds shall be included in the Bid."

B. Sub-paragraph 7.1.2; delete this paragraph.

ARTICLE 8: ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

1. Subparagraph 8.1.5 Drawings: Add the following: "Refer to Index on Drawing Cover Sheet."
2. Subparagraph 8.1.6 Specifications: Add the following: "Refer to Table of Contents in Project Specifications Manual."
3. Subparagraph 8.1.7 Addenda: Add the following: "To be determined during bidding."

ARTICLE 9: CORRECTION OF WORK

1. Paragraph 9.1 Correction of Work after Substantial Completion; add the following:

A. The Bidder shall be required to extend the one-year correction of work period called out in Paragraph 12.2.2 of the General Conditions of the Contract for Construction by one year, resulting in a two year period from the date of Substantial Completion where he will be required to correct Work found not to be in accordance with the requirements of the Contract Documents. The cost of the extension shall be included in the Bid."

ARTICLE 10: SUPPLEMENTARY INSTRUCTIONS

1. Paragraph 10.1 Reference

A. "10.1 Reference; add the following:

1. All references to provisions in Article 10 - Supplementary Instructions to Bidders are hereby transferred to Section 00 21 13 - Supplementary Instructions to Bidders. Any modifications stated in Section 00 21 13 shall have the same force and effect as if stated in Article 10."

END OF SECTION

**SECTION 00 22 15
SPECIAL INSTRUCTIONS**

Special Instructions to bidders, as herein stated, are hereby incorporated in this specification. The Special Instructions shall apply to all Bidders and Sub-bidders.

1. American Rescue Plan Act (ARPA): This project is required to comply with the requirements of the America Rescue Plan Act (ARPA). A copy of the Contract Provisions is included after this section.

END OF SECTION 00 22 15

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County of Johnson
American Rescue Plan Act (ARPA) Contract Provisions Addendum

Notice: The contract or purchase order to which this addendum is attached is made using federal assistance provided to County of Johnson by the US Department of Treasury under the American Rescue Plan Act (“ARPA”), Sections 602(b) and 603(b) of the Social Security Act, Pub. L. No. 117-2 (March 11, 2021).

The following terms and conditions apply to you, the contractor or vendor, as a contractor of County of Johnson according to the County’s Award Terms and Conditions signed on May 12, 2021; by ARPA and its implementing regulations; and as established by the Treasury Department.

1. Equal Opportunity. Contractor shall comply with Executive Order 11246, “Equal Employment Opportunity,” as amended by EO 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and as supplemented by regulations at 41 CFR part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”

Minority and Women Business Enterprises (if applicable to this Contract). Contractor hereby agrees to comply with the following when applicable: The requirements of Executive Orders 11625 and 12432 (concerning Minority Business Enterprise), and 12138 (concerning Women's Business Enterprise), **when applicable**. Accordingly, the Contractor hereby agrees to take affirmative steps to assure that women and minority businesses are utilized when possible as sources of supplies, equipment, construction and services. Affirmative steps shall include the following:

- a. Including qualified women’s business enterprises and small and minority businesses on solicitation lists;
- b. Assuring that women’s enterprises and small and minority businesses are solicited whenever they are potential sources;
- c. When economically feasible, dividing total requirements into smaller tasks or quantities so as to permit maximum participation by small and minority business, and women’s business enterprises;
- d. Where the requirement permits, establishing delivery schedules which will encourage participation by women’s business enterprises and small and minority business;
- e. Using the services and assistance of the Small Business Administration, and the U.S. Office of Minority Business Development Agency of the Department of Commerce; and
- f. If any subcontracts are to be let, requiring the prime Contractor to take the affirmative steps in a through e above.

For the purposes of these requirements, a Minority Business Enterprise (MBE) is defined as an enterprise that is at least 51 percent owned and controlled in its daily operation by members of the following groups: Black, Hispanic, Asian or Pacific Islander, American Indian, or Alaskan Natives. A Women Business Enterprise (WBE) is defined as an enterprise that is at least 51 percent owned and controlled in its daily operation by women.

2. Suspension and Debarment (Applies to all purchases). (A) This contract is a covered transaction for purposes of 2 CFR pt. 180 and 2 CFR pt. 3000. As such, the Contractor is required to verify that none of Contractor’s principals (defined at 2 CFR § 180.995) or its affiliates (defined at 2 CFR § 180.905) are excluded (defined at 2 CFR § 180.940) or disqualified (defined at 2 CFR § 180.935).

(B) The Contractor must comply with 2 CFR pt. 180, subpart C and 2 CFR pt. 3000, subpart C, and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.

(C) This certification is a material representation of fact relied upon by Johnson County. If it is later determined that the contractor did not comply with 2 CFR pt. 180, subpart C and 2 CFR pt. 3000, subpart C, in addition to remedies available to the County, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.

(D) The Contractor agrees to comply with the requirements of 2 CFR pt. 180, subpart C and 2 CFR pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The Contractor further agrees to include a provision requiring such compliance in its lower tier covered transactions.

3. Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352, as amended (Applies to all purchases).

Contractor certifies that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, officer or employee of Congress, or an employee of a Member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Contractor shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient who in turn will forward the certification(s) to the awarding agency.

Purchases over \$100,000 - Contractors must sign the certification on the last page of this addendum

4. Access to Records (Applies to all purchases). (A) The Contractor agrees to provide the County, the U.S. Department of Treasury, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions. The Contractor agrees to permit any of the foregoing parties to reproduce by any means or to copy excerpts and transcriptions as reasonably needed, and agrees to cooperate with all such requests.

(B) The Contractor agrees to provide the Treasury Department or authorized representatives access to construction or other work sites pertaining to the work being completed under the contract.

(C) No language in this contract is intended to prohibit audits or internal reviews by the Treasury Department or the Comptroller General of the United States.

5. Rights to Inventions Made Under a Contract or Agreement. Contracts or agreements for the performance of experimental, developmental, or research work shall provide for the rights of the Federal Government and the recipient in any resulting invention in accordance with 37 CFR part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any applicable implementing regulations.

6. Contract Work Hours and Safety Standards Act (40 U.S.C. 327 through 333) (Applies only to purchases over \$100,000, when laborers or mechanics are used). Where applicable, all contracts in excess of \$100,000 that involve the employment of mechanics or laborers shall include a provision for compliance with 40 U.S.C. 3702 and 3704 of the Contract Work Hours and Safety Standards Act, as supplemented by Department of Labor regulations (29 CFR part 5). Under Section 3702 of the Act, each contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard workweek of 40 hours. Work in excess of the standard workweek is permissible provided that the worker is compensated at a rate of not less than 1 1/2 times the basic rate of pay for all hours worked in excess of 40 hours in the workweek. The requirements of 40 U.S.C. 3704 are applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for

transportation or transmission of intelligence. The Contractor shall comply with the requirements of 40 U.S.C. 3702 and 3704, which are hereby incorporated by reference in this contract.

7. Clean Air Act & Federal Water Pollution Control Act (Applies to purchases of more than \$150,000).

(A) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

(B) The Contractor agrees to comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.

(C) The Contractor agrees to report each violation of the Clean Air Act and the Water Pollution Control Act to the County and understands and agrees that the County will, in turn, report each violation as required to assure notification to the Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.

(D) Contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance.

8. Prohibition on certain telecommunications and video surveillance services or equipment (Huawei and ZTE).

Contractor is prohibited from obligating or expending loan or grant funds to:

(1) Procure or obtain;

(2) Extend or renew a contract to procure or obtain; or

(3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115–232, section 889, covered telecommunications equipment is telecommunications equipment produced by **Huawei Technologies Company or ZTE Corporation** (or any subsidiary or affiliate of such entities).

(i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

(ii) Telecommunications or video surveillance services provided by such entities or using such equipment.

(iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

9. Buy USA - Domestic Preference for certain procurements using federal funds. Contractor should, to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award. For purposes of this section:

(1) “Produced in the United States” means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.

(2) "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

10. Procurement of Recovered Materials (Applies only if the work involves the use of materials).

(A) In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA-designated items unless the product cannot be acquired:

- (i) Competitively within a timeframe providing for compliance with the contract performance schedule;
- (ii) Meeting contract performance requirements; or iii. At a reasonable price.

(B) Information about this requirement, along with the list of EPA- designated items, is available at EPA's Comprehensive Procurement Guidelines web site, <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>.

(C) The Contractor also agrees to comply with all other applicable requirements of Section 6002 of the Solid Waste Disposal Act.

11. Publications. Any publications produced with funds from this award must display the following language: "This project [is being] [was] supported, in whole or in part, by federal award number [enter project FAIN] awarded to [name of Recipient] by the U.S. Department of the Treasury."

12. Increasing Seat Belt Use in the United States. Pursuant to Executive Order 13043, 62 FR 19217 (Apr. 18, 1997), Contractor is encouraged to adopt and enforce on-the-job seat belt policies and programs for your employees when operating company-owned, rented or personally owned vehicles.

13. Reducing Text Messaging While Driving. Pursuant to Executive Order 13513, 74 FR 51225 (Oct. 6, 2009), Contractor is encouraged to adopt and enforce policies that ban text messaging while driving, and establish workplace safety policies to decrease accidents caused by distracted drivers.

14. Copeland Act The Copeland (Anti-Kickback) Act (18 U.S.C.874 and 40 U.S.C.3145) makes it unlawful to induce, by force, intimidation, threat of procuring dismissal from employment, or otherwise, any person employed in the construction or repair of public buildings or public works, financed in whole or in part by the United States, to give up any part of the compensation to which that person is entitled under a contract of employment. The Copeland Act also requires each contractor and subcontractor to furnish weekly a statement of compliance with respect to the wages paid each employee during the preceding week. The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.

- This form is required only for purchases of more than \$100,000 -

31 CFR Part 21 – New Restrictions on Lobbying - CERTIFICATION REGARDING LOBBYING

The undersigned certifies, to the best of their knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a

Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit [Standard Form-LLL](#), "Disclosure Form to Report Lobbying," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all contractors shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Contractor certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. Ch. 38, Administrative Remedies for False Claims and Statements, apply to this certification and disclosure, if any.

Signature of Contractor's authorized official

Date: _____

(Print name of person signing above)

(Print title of person signing above)

**SECTION 00 41 13
BID FORMS**

Bids for construction contracts must be submitted on a copy of the attached bid form.

**JOHNSON COUNTY ADMINISTRATION AND HEALTH &
HUMAN SERVICES BUILDINGS REMODELING PROJECT
IOWA CITY, IOWA**

PROJECT NO. 21412000

TO: Johnson County, Iowa

herein called "Owner"

FROM: _____ (Contractor's Name)

DATE: _____

1. In compliance with the Advertisement for Bids and the proposed Contract Documents relating to the:

Johnson County Administration and Health & Human Services Buildings Remodeling Project

Project Number: 21412000

including Addenda _____, _____, _____, _____.

the undersigned hereby proposes and agrees to fully perform the Work within the time stated and in strict accordance with the proposed Contract Documents dated May 12, 2023, including furnishing labor and/or materials, and to do all of the work required to construct and complete said Work in accordance with the Contract Documents as follows:

For complete Construction as described in the Bidding Documents:

BASE BID:

_____ dollars (\$ _____)

2. I understand that the Owner reserves the right to reject this Bid, but that this Bid shall remain open and not be withdrawn for a period of thirty days from the date of the Bid Opening.
3. Notice of acceptance, or request for additional information, may be addressed to the undersigned at the address set forth below.
4. I agree to complete the work within the schedule of completion stated in the Bidding Documents.

SIGN HERE:

Signature of Bidder

Note: If bidder is a corporation, set forth the legal name of the corporation together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If bidder is a partnership, set forth the name of the firm together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership.

BUSINESS ADDRESS:

TELEPHONE NUMBER:

END OF SECTION 00 41 13

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**SECTION 00 43 13
SUPPLEMENTS TO BID FORMS**

In accordance with the Instructions to Bidders and Supplementary Instructions to Bidders, submit the following forms:

1. Bid Security: A certified check, a surety bond written on an original AIA Document A310, Bid Bond, Current Edition, or a certified share draft. The Bid Security shall be in an amount to cover five percent (5%) of the total bid amount (including all Add Alternates).

END OF SECTION 00 43 13

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SECTION 00 43 25
SUBSTITUTION REQUEST FORM - DURING BIDDING

Project: _____

Bid Date: _____

We hereby submit for your consideration the following product instead of the specified item for the above project:

Drawings/Specifications:

Drawing Name/Number: _____

Spec Section/Name: _____

Paragraph: _____

Specified Item: _____

Proposed Substitution: _____

Attach complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation. Failure to fully complete this form is basis to not accept this Substitution Request.

Submit, with request, all necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance.

CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE

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

SUBMITTED BY: _____

SIGNATURE: _____ TITLE: _____

FIRM: _____

ADDRESS: _____

TELEPHONE: _____ E-MAIL: _____ DATE: _____

Signature shall be by person having authority to legally bind firm to the above items. Failure to provide binding signature will result in retraction of approval.

For Use by Owner's Representative or Owner:

Accepted Accepted as Noted Not Accepted Received Too Late

By: _____

Date: _____

Fill in Blanks Below (All items must be completed):

A. Does the substitution affect dimensions shown on Drawings? Yes _____ No _____

If yes, clearly indicated changes: _____

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution? Yes _____ No _____

If no, fully explain: _____

C. What effect does substitution have on other Contracts or other trades? _____

D. What effect does substitution have on construction schedule. _____

E. Manufacturer's warranties of the proposed and specified items are:

_____ Same _____ Different (Explain on Attachment)

Reason for Substitution Request: _____

F. Itemized comparison of specified item(s) with the proposed substitution.

List significant variations: _____

G. Accurate cost data comparing proposed substitution with product specified.

H. Designation of maintenance services and sources: _____

(ATTACH ADDITIONAL SHEETS IF REQUIRED)

END OF SECTION

**SECTION 00 52 00
AGREEMENT FORM**

American Institute of Architects Document A101 - 2017, Standard Agreement Between Owner and Contractor, is hereby incorporated by reference in this specification and is available from the Architect: OPN Architects, Inc., 24-1/2 S. Clinton Street, Suite 1, Iowa City, IA 52240. It shall be the Agreement for the Work.

END OF SECTION

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**SECTION 00 61 13
BONDS AND CERTIFICATES**

American Institute of Architects Document A312, Performance Bond and Labor and Material Payment Bond, December, 1984, and Document G715–1991, Supplemental Attachment for ACORD Certificate of Insurance 25-S, 2001 Edition, or ACCORD form 25-S, shall be submitted to fulfill the requirements of the Bidding Documents. All submittals shall be on original forms with original signatures.

END OF SECTION 00 61 13

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SECTION 00 63 25
SUBSTITUTION REQUEST FORM - DURING CONSTRUCTION

Project:

We hereby submit for your consideration the following product instead of the specified item for the above project:

Drawings/Specifications:

Drawing Name/Number: _____

Spec Section/Name: _____

Paragraph: _____

Specified Item: _____

Proposed Substitution: _____

Attach complete information on changes to Drawings and/or Specifications which proposed substitution will require for its proper installation. Failure to fully complete this form is basis to not accept this Substitution Request.

Submit, with request, all necessary samples and substantiating data to prove equal quality and performance to that which is specified. Clearly mark manufacturer's literature to indicate equality in performance.

CERTIFICATION OF EQUAL PERFORMANCE AND ASSUMPTION OF LIABILITY FOR EQUAL PERFORMANCE

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

SUBMITTED BY: _____

SIGNATURE: _____ TITLE: _____

FIRM: _____

ADDRESS: _____

TELEPHONE: _____ E-MAIL: _____ DATE: _____

Signature shall be by person having authority to legally bind firm to the above items. Failure to provide binding signature will result in retraction of approval.

For Use by Owner's Representative or Owner:

Accepted Accepted as Noted Not Accepted Received Too Late

By: _____

Date: _____

Fill in Blanks Below (All items must be completed):

A. Does the substitution affect dimensions shown on Drawings? Yes _____ No _____

If yes, clearly indicated changes:

B. Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution? Yes _____ No _____

If no, fully explain: _____

C. What effect does substitution have on other Contracts or other trades?

D. What effect does substitution have on construction schedule.

E. Manufacturer's warranties of the proposed and specified items are:

_____ Same _____ Different (Explain on Attachment)

F. Reason for Not Providing Specified Product: _____

G. Itemized comparison of specified item(s) with the proposed substitution.

List significant variations:

H. Accurate cost data comparing proposed substitution with product specified.

I. Designation of maintenance services and sources:

J. Savings to Owner for Accepting Substitution: \$ _____

(ATTACH ADDITIONAL SHEETS IF REQUIRED)

END OF SECTION

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**SECTION 00 72 00
GENERAL CONDITIONS**

FORM OF GENERAL CONDITIONS

American Institute of Architects Document A201-2017, General Conditions of the Contract for Construction, is hereby incorporated in this specification by reference and is available from the Architect: OPN Architects, Inc., 24-1/2 S. Clinton Street, Suite 1, Iowa City, IA 52240. The General Conditions, including modifications and Special Conditions shall apply to all contractors and sub-contractors.

END OF SECTION

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**SECTION 00 73 01
SUPPLEMENTARY CONDITIONS FOR AIA A201-2017**

THE FOLLOWING SUPPLEMENTS MODIFY, CHANGE DELETE FROM OR ADD TO THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION", AIA DOCUMENT A201 - 2017. WHERE ANY ARTICLE OF THE GENERAL CONDITIONS IS MODIFIED OR DELETED BY THESE SUPPLEMENTARY CONDITIONS, THE UNALTERED PROVISIONS OF THAT ARTICLE, PARAGRAPH, SUBPARAGRAPH OR CLAUSE SHALL REMAIN IN EFFECT.

ARTICLE 1 - GENERAL PROVISIONS

1. Paragraph 1.2 Correlation and Intent of the Contract Documents
 - A. Add sub-paragraph 1.2.4 to paragraph 1.2.
 1. "1.2.4 In the case of an inconsistency between Drawings and Specifications, or within either Document itself, not clarified by Addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation. In any case of discrepancy, the facts are to be brought to the attention of the Architect for a decision or interpretation."

ARTICLE 2 – OWNER

1. Paragraph 2.3 Information and Services Required of the Owner
 - A. Sub-paragraph 2.3.4: Add the following to the end of paragraph:
 1. "The Contractor shall compare information furnished by the Owner (including surveys and soil tests with observable physical conditions) and the Contract Documents and on the basis of such review, shall report to the Owner and Architect any conflicts, errors or omissions."
2. Paragraph 2.3 Information and Services Required of the Owner
 - A. Sub-paragraph 2.3.6: Delete and add the following:
 1. "2.3.6 The Contractor will be furnished, free of charge, all returned bid sets of Drawings and Project Manuals, and may request up to 10 additional copies of Drawings and Project Manuals for execution of Work. Costs for copies of drawings and Project Manuals in excess of this number shall be the responsibility of the Contractor."

ARTICLE 3 – CONTRACTOR

1. Paragraph 3.1 General
 - A. Add the following language to the end of Paragraph 3.1.1
 1. "Contractor shall at request of Owner prior to execution of Agreement and promptly from time to time as requested by the Owner, thereafter furnish Owner an update and current financial statement and/or Contractor Qualification Statement on AIA Document A305."

2. Paragraph 3.2 Review of Contract Documents and Field Conditions by Contractor
 - A. Add the following language to the end of Paragraph 3.2.1
 1. "The Contractor also represents that all Contract Documents for the Project have been examined; including those intended for work of trades not normally performed by the Contractor's own forces, and has become thoroughly familiar with all conditions which may pertain to or affect the Work under the Contract."
3. Paragraph 3.4 Labor and Materials
 - A. Add the following language to the end of Paragraph 3.4.1:
 1. "Work required by the Contract Documents to be performed after working hours or work the Contractor elects to perform after hours shall be completed at no additional cost to the Owner."
 - B. Add Sub-subparagraph 3.4.3.1 to Sub-paragraph 3.4.3:
 1. "The Contractor (Company) shall not be owned, operated, or managed by a registered sex offender who has been convicted of a sex offense against a minor in accordance with Iowa Code 692A.113. In addition, the Contractor shall not permit an employee, Subcontractor (Company) owned, operated, or managed by, or Subcontractor employee who is a registered sex offender convicted of a sex offense against a minor on real property of the schools of the Owner in accordance with Iowa Code 692A.113. The Contractor shall further acknowledge and certify services provided under this Contract comply with Iowa Code 692A.113. Each contractor and subcontractor shall be responsible for providing documentation showing compliance with this requirement."
4. Add new paragraph 3.4.4 as follows:
 - A. "3.4.4 Contractor shall perform the Work so as to cause a minimum of inconvenience to and interruption of the Owner's operations. Any and all interruptions of the operations of the Owner necessary for the performance of the Work shall be noted in the progress schedule and the Contractor shall additionally give the Owner sufficient advance notice of such interruption as to allow the Owner to adjust operations accordingly. Contractor's failure to give the Owner timely notice of such intentions shall place the responsibility of any resulting delays or additional costs solely with the Contractor."
5. Paragraph 3.6 Taxes
 - A. Add Sub-paragraphs 3.6.1, 3.6.2 and 3.6.3:
 1. "3.6.1 This Project is Exempt from Iowa Sales Tax. The Owner will provide each contractor/subcontractor with an exemption certificate from the Iowa Department of Revenue for the purchase of building materials for this Project.
 2. "3.6.2 At or before the time the Performance Bond is filed, Contractor shall provide a listing to the Owner identifying all subcontractors. Contractor and subcontractors may make copies of the exemption certificate and shall provide, at the time of purchase, a copy of the tax exemption certificate to each supplier providing construction material for the Project. The Contractor or subcontractors may then purchase from the suppliers building

materials for the project under this Contract free from sales tax.

3. 3.6.3. The Contractor and subcontractors shall be responsible for keeping records identifying the property purchased exempt from tax and verifying that the property purchased was used in this contract with this Owner. Any property purchased tax-free and not used in this contract is subject to tax which must be paid directly to the Iowa Department of Revenue.”
6. Paragraph 3.7 Permits, Fees, Notices and Compliance with Laws
 - A. Sub-paragraph 3.7.4: Claims for Concealed or Unknown Conditions; add the following before the last line:
 1. "Failure to properly register a claim within the 21 day period shall be grounds for denial of the claim."
 - B. Sub-paragraph 3.7.5: Modify by adding the underlined words so that the section now reads as follows:
 1. "3.7.5 If, in the course of the Work, the Contractor knowingly encounters and recognizes human remains, burial markers, archeological sites or previously undelineated 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 or good faith belief of such existence of such remains or features may be made as provided in Article 15.
7. Add Sub-paragraph 3.7.6:
 - A. The Contractor is responsible for scheduling inspections related to the performance of its work and ensuring work is complete for inspections. Any costs associated with reinspection caused by irregularities, deficiencies or non-conforming work will be borne by the responsible contractor including all Architectural and Engineering Services related to evaluation of the problem and development of an acceptable solution.”
8. Paragraph 3.10 Contractor's Construction and Submittals Schedules
 - A. Refer to Sub-paragraph 3.10.1 in the first sentence replace "promptly after being awarded" with the following text:
 1. "within twenty-one (21) days of the award of"
 - B. Refer to Sub-paragraph 3.10.1 in the last sentence after “Work and Project,” add the following text:
 1. "or as requested by the Owner or Architect”

- C. Refer to Sub-paragraph 3.10.2 in the first sentence replace “, promptly after being awarded ” with the following text:
 - 1. within twenty-one (21) days of the award of ”

ARTICLE 4 – ARCHITECT

1. Paragraph 4.2.4 Communications

A. Sub-paragraph 4.2.4; Add the following subparagraphs:

- 1. "4.2.4.1 All notices, demands, requests, instructions, approvals, proposals and claims must be in writing. Any notice or demand upon the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the agreement (or at such other office as the contractor may from time to time designate in writing to the Owner), or if deposited in the United States mail in a sealed, postage-paid envelope or delivered with charges prepaid to any telegraph company for transportation, in each case addressed to such office."
- 2. "4.2.4.2 All papers required to be delivered to the Owner shall, unless otherwise specified in writing to the Contractor, be delivered to the office of OPN Architects, Inc., 200 Fifth Avenue S.E., Suite 201, Cedar Rapids, Iowa 52401 and any notice to or demand upon the Owner shall be sufficiently given if so delivered, or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered with charges prepaid to any company for delivery to said Owner at such address, or to such other representatives of the Owner may subsequently specify in writing to the Contractor for such purpose."
- 3. "4.2.4.3 Any such notice shall be deemed to have been given as of the time of actual delivery of (in the case of mailing) when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be."

article 5 - subcontractors - no modifications

ARTICLE 6 - constrUction by owner or by separate contracts - no modifications

ARTICLE 7 - CHANGES IN THE WORK

1. Paragraph 7.1 Changes

A. Sub-paragraph 7.1.4: Add the following sub-paragraph:

- 1. "7.1.4 Supporting data used to determine the costs and allowances claimed in Sub-paragraph 7.3.7 must be made available to the Architect upon request."

2. Paragraph 7.2 Change Orders

A. Sub-paragraph 7.2.2: Add the following sub-paragraph:

- 1. "7.2.2 The forms used to process a Change Order will include AIA Document G701, Change Order."

B. Sub-paragraph 7.2.3: Add the following sub-paragraph:

1. "7.2.3 Change Order requests will define or confirm in detail the Work which is proposed to be added, deleted, or changed and must include any adjustment which the Contractor believes to be necessary in (i) the Contract Sum, or (ii) the Contract Time. Any proposed adjustment must include detailed documentation including, but not limited to: cost, properly itemized and supported by sufficient substantiating data to permit evaluation including cost of labor, materials, supplies and equipment, rental cost of machinery and equipment, additional bond cost, plus a fixed fee for profit and overhead which includes office overhead and site-specific overhead and General Conditions. No increase in Contract Sum or an extension of Contract Time will be granted to the Contractor for cost or time in the preparation or modification of Change Order requests."
- C. Sub-paragraph 7.2.4: Add the following sub-paragraph:
 1. "7.2.4 The maximum percentage of combined overhead and profit for changes in the work performed by the Contractor shall be 10%. If the changed work is performed by a Subcontractor, a maximum of 5% may be added by that Subcontractor on his work for combined overhead and profit and an additional maximum of 5% may be added by the Contractor for administration and coordination of said Subcontractor work. This paragraph shall apply to the methods set forth in sub-paragraphs 7.3.3.1 and 7.3.3.4 for determining the costs of changed work unless waived in writing by the Owner. The Contractor shall verify compliance of the Subcontractors and shall not sign Change Orders which do not comply with the maximum limits."
- D. Sub-paragraph 7.2.5: Add the following sub-paragraph:
 1. "7.2.5 Subcontractors or Sub-subcontractors shall compute their costs in the same way and are subject to the same conditions of what may be included in the cost and same maximum percentages for overhead and profit or commission. To the Sub-Subcontractor's proposal, the Subcontractor may add bond cost, if applicable, and a maximum of 5% for combined overhead and profit or commission. To the Subcontractors proposal, the Contractor may add bond cost and a maximum of 5% for combined overhead and profit or commission."
3. Paragraph 7.3 Construction Change Directives
 - A. Sub-paragraph 7.3.3.3; Substitute the following:

".3 cost to be determined in a manner agreed upon by the parties, plus the percentage of combined overhead and profit."
 - B. Sub-paragraph 7.3.4; Line 4:

Replace "set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount." with "indicated in sub-paragraph 7.3.11."
 - C. Add sub-paragraph 7.3.11:

"7.3.11 The maximum percentage of combined overhead and profit for changes in the work performed by the Contractor shall be 10%. If the changed work is performed by a Subcontractor, a maximum of 5% may be added by that Subcontractor on his work for combined overhead and profit and an additional maximum of 5% may be added by the

Contractor for administration and coordination of said Subcontractor work. This paragraph shall apply to the methods set forth in sub-paragraphs 7.3.3.1 and 7.3.3.4 for determining the costs of changed work unless waived in writing by the Owner. The Contractor shall verify compliance of the Subcontractors and shall not sign Change Orders which do not comply with the maximum limits."

D. Sub-paragraph 7.3.12: Add the following sub-paragraph:

1. "7.3.12 Subcontractors or Sub-subcontractors shall compute their costs in the same way and are subject to the same conditions of what may be included in the cost and same maximum percentages for overhead and profit or commission. To the Sub-Subcontractor's proposal, the Subcontractor may add bond cost, if applicable, and a maximum of 5% for combined overhead and profit or commission. To the Subcontractors proposal, the Contractor may add bond cost and a maximum of 5% for combined overhead and profit or commission."

ARTICLE 8 - TIME

1. Paragraph 8.3 DELAYS AND EXTENSIONS OF TIME

A. Sub-paragraph 8.3.1, line 4:

Add the following language to the end of Paragraph 8.3.1:

"A time extension shall be Contractor's sole remedy and compensation for all such delays other than those resulting from the acts or negligence of the Owner, the Architect, or the Owner's separate contractors (collectively "Owner Caused Delays"). For proven Owner Caused Delays, the Contractor may recoup the actual costs resulting from such delays, but not for any additional profit or fee."

ARTICLE 9 - PAYMENTS AND COMPLETION

1. Paragraph 9.3 Applications for Payment

A. Sub-paragraph 9.3.1; change to read as follows:

1. "At least thirty days before....., and shall reflect retainage of five percent of the total amount due the Contractor."

B. Add the following new text to the end of Sub-paragraph 9.3.1:

1. "Once the Application is approved by the Architect, the Application for Payment must be submitted for approval to the Johnson County Board at their next regularly scheduled meeting. The approved application must be received at the Board office at least one week prior to the scheduled meeting for it to be included in that meeting's scheduled business. AIA Documents G702 - Application and Certificate for Payment and G703 are to be used for Applications for Payment."

C. Add the following to the end of sub-paragraph 9.3.1.1.

1. "...If the Construction Schedule as submitted by the Contractor is deemed unattainable by either the Contractor or the Architect, or if any portion of the Construction Schedule has

not been completed as submitted, the Contractor shall submit a revised Construction Schedule with the subsequent Application for Payment. The Architect will review the revised Construction Schedule with the Owner, and if acceptable, will notify the Contractor and will submit the Application for Payment to the Owner as provided in Section 9.4. If the revised Construction Schedule is not acceptable to the Architect and the Owner, the Application for Payment will not be submitted for payment until an acceptable revised Construction Schedule is provided by the Contractor."

D. Add sub-paragraphs 9.3.1.3 and 9.3.1.4 to paragraph 9.3.1.

1. "9.3.1.3 Retainage: The Owner shall pay ninety-five percent (95%) of the amount due the Contractor on account of progress payments throughout the duration of the project. The Contractor shall submit a final application for payment of retainage at the conclusion of the project.
2. 9.3.1.4 Applications for Payment shall clearly state the percentage and the amount to be retained. Once the Application is approved by the Architect, the Application for Payment will be submitted for approval to the Johnson County Board for approval at their next regularly scheduled meeting. The application must be received at the Board office in accordance with Board procedures in order to be included in that meeting's scheduled business."

2. Paragraph 9.5 Decisions to Withhold Certification

A. Add Sub-paragraph 9.5.5:

1. "9.5.5 The Contractor shall make accessible and available to the Architect all labor, material, and equipment accounts related to the work in question, insofar as they may in any way affect a disputed amount due the Contractor from the Owner."

3. Paragraph 9.6. Progress Payments

A. Sub-paragraph 9.6.4; Delete the first two sentences of paragraph.

4. Paragraph 9.7 Failure of Payment

A. Sub-paragraph 9.7.1; revise the sub-paragraph as follows:

In the first line, change "...seven days..." to "... fifteen days..."

In the second line, change "...seven days..." to "... fifteen days..."

5. Paragraph 9.8 Substantial Completion

A. Sub-paragraph 9.8.1; add the following to the end of the sub-paragraph:

1. "...subject only to completion of minor punch list items, the absence of completion of which does not interfere with the Owner's intended use of the Project."

B. Sub-paragraph 9.8.6; add the following new sub-paragraph:

The Contractor shall reimburse the Owner for any Architect's additional services made necessary by the Contractor's failure to finally complete the Work within sixty (60) days

after the date of Project Substantial Completion.”

- C. Sub-paragraph 9.8.7; add the following new sub-paragraph:

"9.8.7 Request for Early Release of Retainage Funds: If the Contractor makes a proper request for early release of retainage funds, the Owner will release all retainage funds at their next monthly Board meeting or within thirty (30) days of receipt of the request, whichever is less, except it may retain from the released retainage the following:

An amount equal to 200% of the value of labor or materials yet to be provided on the Project as determined by the Owner and its authorized contract representative. For purposes of this section, "authorized contract representative" means the Architect of record on the Project, unless otherwise specified.

An amount equal to 200% of the value of any Iowa Code Chapter 573 claims currently on file at the time the Request for Release of Retainage is approved. If the Owner withholds an amount from the retainage payment to the Contractor, the Owner will provide a reason the request is being denied to the Contractor within thirty (30) calendar days of the receipt of the request."

ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

1. Paragraph 10.1 Safety Precautions and Programs

- A. Add sub-paragraph 10.1.1 as follows:

"10.1.1 Contractor shall take all necessary precautions to keep the site and work in compliance with the safety and health regulations for construction issued by the Bureau of Labor Standards of the U.S. Department of Labor as well as the Occupational Safety and Health Standards parts 1910 and 1926 as amended and as enforced by the State of Iowa."

2. Paragraph 10.2 Safety of Persons and Property

- A. Add the following text to Sub-paragraph 10.2.2:

"Contractors shall also comply with the Iowa Smoke Free Air Act while on Owner Property and shall not smoke any tobacco product while on Owner property. For purposes of this subparagraph, Owner property shall include inside private Contractor or employee owned vehicles while parked on Owner property."

ARTICLE 11 - INSURANCE AND BONDS

WORK SHALL NOT BEGIN UNTIL THE CERTIFICATE OF INSURANCE AND ALL REQUIRED ENDORSEMENTS ARE RECEIVED AND APPROVED BY JOHNSON COUNTY.

1. Paragraph 11.1.1 Contractor's Insurance and Bonds

- A. Delete original Subparagraph 11.1.1 and replace with the following:

"11.1.1 Contractor shall purchase and maintain insurance coverage for limits as specified in the Contract Documents. The limits of liability for the insurance required by Section 11.1.1 of the

General Conditions shall not be less than the following amounts or greater where required by laws and regulations:

1. Workers' Compensation: Statutory
2. Employer's Liability:
 - Bodily Injury by Accident, Each Accident: \$ 500,000
 - Bodily Injury by Disease, Each Employee \$ 500,000
 - Policy Limit \$ 500,000
3. General Liability, including completed operations and product liability coverages and eliminating the exclusion with respect to property under the care, custody and control of Contractor
 - a. General Aggregate: \$ 2,000,000
 - b. Products – Completed Operations Aggregate: \$ 2,000,000
 - c. Personal and Advertising Injury (Per Person/Organization): \$ 1,000,000
 - d. Each Occurrence (Bodily Injury and Property Damage): \$ 1,000,000
 - e. Fire Legal Liability Damage Limit (any One Fire): \$ 50,000
 - f. Medical Expense Limit (Any One Person): \$ 5,000
4. Property Damage liability insurance will provide Explosion, Collapse, and Underground coverages. Policy shall include as a minimum the following coverages:
 - a. Broad Form Property Damage Coverage.
 - b. An elimination of the exclusions with respect to property under the care, custody or control of Contractor. In lieu of elimination of the exclusion, Contractor may provide Builder's Risk or Installation Floater coverage for property under the care, custody, or control of Contractor.
 - c. Contractual Liability Coverage.
 - d. Independent Contractor Coverage.
5. Automobile Liability
 - a. Bodily Injury, Each Person: \$ 1,000,000; Each Accident: \$ 1,000,000
 - b. Property Damage, Each Accident: \$ 1,000,000
 - c. Combined Single Limit: \$ 1,000,000
 - d. Policy shall include contractual liability coverage and coverage on all owned, nonowned, and hired vehicles.

6. The Contractual Liability coverage required by Sec. 11.1.1.8 of the General Conditions shall provide coverage for not less than the following amounts:
 - a. Bodily Injury, Each Accident: \$ 1,000,000; Annual Aggregate \$ 2,000,000
 - b. Property Damage, Each Accident: \$ 1,000,000; Annual Aggregate \$ 2,000,000
7. Additional insurances required:
 - a. Umbrella. The stated limits of paragraphs A(1) through A(5) of this Article 3 can be obtained through individual policies or if Contractor desires to reduce underlying limits to minimums required by its insurance carrier, an umbrella policy must accordingly be provided to maintain overall total level of coverage. Any Umbrella insurance shall be written on an occurrence basis and pay on behalf form and shall include the same endorsements and additional insureds as required of the primary policies.
 - b. An excess umbrella policy (pay on behalf form) with limits of \$2,000,000 for Employer's liability, Contractor's General Liability, (bodily injury, personal injury and property damage), Automobile Liability, and Contractual Liability on a combined basis shall be provided. Any Excess insurance shall be written on an occurrence basis and pay on behalf form and shall include the same endorsements and additional insureds as required of the primary policies. Policy shall include Owner, Architect and any others required by Section 11.1 of the General Conditions as additional insureds.
8. If the property insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles in the event of a claim arising from the Contractor's error or negligence.
9. Additional insureds coverage:
 - a. Insurance certificates shall specifically indicate by name the additional insureds which are to include Owner and Architect as well as other persons or entities so identified:
 - 1) "Johnson County, Iowa, its officers and employees, and Architect shall be named as additional insureds" on the Contractor's, subcontractor's and independent contractor's liability insurance policies and certificates of insurance.
 - 2) No Others

General Aggregate Limits specified above shall apply separately to this project by attachment of Additional Insured Endorsement, and Governmental Immunities Endorsement, text as given below.

JOHNSON COUNTY, IOWA

ADDITIONAL INSURED ENDORSEMENT

Johnson County, Iowa, including all its elected and appointed officials, all its employees and volunteers, all its boards, commissions and/or authorities and their board members, employees, and volunteers, are included as Additional Insured with respect to liability arising out the Insured's work and/or services performed for Johnson County, Iowa. This coverage shall be primary to the

Additional Insured, and not contributing with any other insurance or similar protection available to the Additional Insureds, whether available coverage be primary, contributing or excess.

A COPY OF ONE (1) ENDORSEMENT IS REQUIRED:

Cancellation and Material Changes Endorsement

Thirty (30) days Advance Written Notice of Cancellation, Non-Renewal, Reduction in insurance coverage and/or limits and ten (10) days written notice of non-payment of premium shall be sent to:

Guillermo Morales

Executive Director

Johnson County Board of Supervisors Office

913 S. Dubuque Street

Iowa City, IA 52240-4273

Email: gmorales@johnsoncountyiowa.gov

(Please note that Johnson County does accept a signed letter on the agent's letterhead, from the insured's insurance agent, confirming that the agent will provide notice as indicated above.)

The Contractor is required to purchase and maintain insurance coverage to protect the Contractor and Johnson County throughout the duration of this Contract as enumerated above in the minimum limits above written and the requirement shall be a part of the Contract. Failure on the part of the Contractor to maintain this insurance in full effect will be treated as a failure on the part of the Contractor to comply with these requirements and be considered sufficient cause to suspend the work, withhold payment(s), and/or be disqualified in the future.

The insurance policies shall be issued by insurers authorized to do business in the State of Iowa and currently having an A.M. Best Rating of "B+" or better. All policies shall be occurrence form. If Professional Liability coverage is written on a claim made policy form, the certificate of insurance must clearly state coverage is claims made and coverage must remain in effect for at least two years after final payment with the Contractor continuing to furnish Johnson County certificates of insurance.

The Contractor shall be responsible for deductibles and self-insured retentions in the Contractor's insurance policies.

The Contractor is required to give Johnson County notice of any change in coverage, specifically, any reduction in coverage and cancellation of coverage no less than thirty (30) days prior to the effective date of any non-renewal or cancellation of any policies required by the Contract.

JOHNSON COUNTY intends to be an Additional Insured with coverage being primary and not contributing with any other insurance or similar protection available to JOHNSON COUNTY whether any other coverage is primary, contributing or excess. JOHNSON COUNTY may require an endorsement preserving JOHNSON COUNTY's governmental immunities under such coverage. See attached.

In the case of any work sublet, the Contractor shall require subcontractors and independent contractors working under the direction of either the Contractor or a subcontractor to carry and maintain the same workers compensation and liability insurance required of the Contractor.

A Certificate of Insurance is required evidencing all required insurance coverage as provided above with any required endorsements attached so as to evidence their inclusion in the coverage. The Certificate of Insurance is due before the Contract can be approved.

The following address must appear in the Certificate Holder section:

Johnson County Board of Supervisors

913 S. Dubuque Street

Iowa City, IA 52240-4273

Email: Guillermo Morales: gmorales@johnsoncountyiowa.gov

The Producer's contact person's name, phone number and e-mail address are required.

Certificate may be sent by e-mail (gmorales@johnsoncountyiowa.gov) to the attention of Guillermo Morales

Bonding Requirements: Applicable for construction or facility improvement contracts or subcontracts exceeding the simplified acquisition threshold (\$150,000), the awarding agency may accept the bonding policy and requirements of the recipient (State if Iowa) or sub-recipient (JOHNSON COUNTY) provided the awarding agency has made a determination that the awarding agency's interest is adequately protected. If such a determination has not been made, the minimum requirements shall be as follows:

- B. A bid guarantee from each Contractor equivalent to five percent (5%) of the bid price. The "bid guarantee" shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the Contractor will, upon acceptance of its bid, execute such contractual documents as may be required within the time specified.
- C. A performance bond on the part of the Contractor for 100 percent (100%) of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the Contractor's obligations under such contract.
- D. A payment bond on the part of the Contractor for 100 percent of the contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

JOHNSON COUNTY, IOWA

GOVERNMENTAL IMMUNITIES ENDORSEMENT

(for use when including the County as an Additional Insured)

1. Nonwaiver of Government Immunity. The insurance carrier expressly agrees and states that the purchase of this policy and the including of Johnson County, Iowa as Additional Insured does not

waive any of the defenses of governmental immunity available to Johnson County, Iowa under Code of Iowa Section 670.4 as it now exists and as it may be amended from time to time.

2. Claims Coverage. The insurance carrier further agrees that this policy of insurance shall cover only those claims not subject to the defense of governmental immunity under the Code of Iowa Section 670.4 as it now exists and as may be amended from time to time.

3. Assertion of Government Immunity. Johnson County, Iowa shall be responsible for asserting any defense of governmental immunity, and may do so at any time and shall do so upon the timely written request of the insurance carrier. Nothing contained in this endorsement shall prevent the carrier from asserting the defense of governmental immunity on behalf of Johnson County, Iowa.

4. Non-Denial of Coverage. The insurance carrier shall not deny coverage under this policy and the insurance carrier shall not deny any of the rights and benefits accruing to Johnson County, Iowa under this policy for reasons of governmental immunity unless and until a court of competent jurisdiction has ruled in favor of the defense(s) of governmental immunity asserted by Johnson County, Iowa.

5. No Other Change in Policy. The insurance carrier and Johnson County, Iowa agree that the above preservation of governmental immunities shall not otherwise change or alter the coverage available under the policy."

2. Paragraph 11.2.1 Owner's Insurance Bonds

A. To the end of original Subparagraph 11.2.1 add the following sentence:

1. "Insofar as there is a deductible for any builder's risk insurance policies or coverage obtained by Owner, the Contractor shall be responsible for any losses or costs associated with such deductible(s)."

ARTICLE 12 – CORRECTION OF WORK

1. Paragraph 12.2.2 after substantial completion:

- A. Sub-Paragraph 12.2.2.1 lines 1 and 8; change "one year" to "two years".
- B. Sub-Paragraph 12.2.2.2, line 1; change "one-year" to "two-years".
- C. Sub Paragraph 12.2.2.3, line 1; change "one-year" to "two-years".

2. Paragraph 12.2.5, line 2; change "one-year" to "two-years".

ARTICLE 13 – MISCELLANEOUS PROVISIONS

1. Paragraph 13.5: Substitute the following paragraph:

"Payments due and unpaid under the Contract Documents shall bear interest from the date the payment is due and shall bear interest at the rate established by Chapter 74A, Code of Iowa."

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

1. Paragraph 14.2 Termination by the Owner for cause

- A. Sub-paragraph 14.2.2; after the word "surety" insert, "and unless otherwise prohibited by applicable statutory law:"

ARTICLE 15 – CLAIMS AND DISPUTES

1. Paragraph 15.1.2 Time Limits on Claims

- A. Delete 15.1.2 and replace with the following:

1. 15.1.2 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

- a. 15.1.2 As between the Owner and Contractor:

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

2. Subparagraph 15.2.8: Delete current language in its entirety and replace with the following:

- A. "If a Claim relates to or is the subject of an Iowa Code Chapter 573 Claim, the party asserting such Claim may proceed in accordance with Iowa Code Chapter 573 to comply with the Iowa Code Chapter 573 notice and/or filing deadlines prior to resolution of the Claim by the Architect or by mediation."

3. Paragraph 15.3 Mediation:

- A. Sub-paragraph 15.3.2: delete the last two sentences in this sub-paragraph.

4. Paragraph 15.4 Arbitration: Delete 15.4 in its entirety.

ARTICLE 16 – SUPPLEMENTARY CONDITIONS

1. Paragraph 16.1 Reference; Add the following:

A. "16.1 Reference

1. All references to provisions in Article 16 – Supplementary Conditions are hereby transferred to Section 00 73 00 – Supplementary Conditions. Any modifications stated in Section 00 73 00 shall have the same force and effect as if stated in Article 16."

END OF SECTION 00 73 00

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**SECTION 00 73 10
SPECIAL CONDITIONS**

EMPLOYMENT PRACTICES

1. Statement of Intent:

It is the intent of Johnson County to assure equal employment opportunity in all Contract work. Contractors are required to take affirmative action to ensure that applicants employed or seeking employment with them are treated equally without regard to race, color, creed, religion, national origin, sex, disability, marital status and age.

2. Assurance of Compliance:

Contractor shall submit an Equal Employment Opportunity Statement for the Owner's files. During the course of the Contract, the Owner will monitor the Contractor's compliance with the EEO/Affirmative Action requirements. Noncompliance with the provisions set forth at the time of contract award may result in termination or suspension of the Contract in whole or in part.

AMERICAN RESCUE PLAN ACT

3. American Rescue Plan Act (ARPA):

This project is required to comply with the requirements of the America Rescue Plan Act (ARPA). The Contract Provisions included in SECTION 00 22 15 SPECIAL INSTRUCTIONS, Special Instructions to bidders, above, is hereby incorporated in its entirety by this reference. Contractor shall sign and submit the CERTIFICATION REGARDING LOBBYING form included with the ARPA Contract Provisions at the time of execution of this Contract.

END OF SECTION 00 73 10

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**SECTION 01 10 00
SUMMARY**

PART 1 GENERAL

1.01 PROJECT

- A. Project Name: Johnson County Administration and Health & Human Services Buildings Remodeling Project
- B. Architect's Name: OPN Architects, Inc.
- C. Project Description: The project consists of remodels to two existing buildings and associated site improvements.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on a Stipulated Price.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of alterations work is indicated on drawings.

1.04 OWNER OCCUPANCY

- A. Owner intends to continue to occupy adjacent portions of the existing building during the entire construction period.
 - 1. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations.
 - 2. Maintain exits, unless otherwise indicated.
 - 3. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors or other occupied or used facilities without written permission from Owner and authorities having jurisdiction.
 - 4. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.
- B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
 - 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
 - 3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
 - 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

1.05 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Arrange use of site and premises to allow:
 - 1. Owner occupancy.
 - 2. Work by Others.
 - 3. Work by Owner.
 - 4. Use of site and premises by the public.
- C. Provide access to and from site as required by law and by Owner:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily

- altered.
- 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- D. Time Restrictions:
 - 1. Limit conduct of especially noisy, malodorous, and dusty work to prior to 8:00 a.m. or on weekends.
- E. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services. Coordinate disruptions with the Owner in advance.
 - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
 - 3. Prevent accidental disruption of utility services to other facilities.
- F. Noise, Vibration and Odors: Coordinate operations that may result in high levels of noise and vibration, odors or other disruption to Owner occupancy with Owner.
 - 1. Notify Architect and Owner not less than two days in advance of proposed disruptive operations.
- G. Nonsmoking Campus: Smoking or any tobacco use is not permitted on the county campus.

1.06 WORK SEQUENCE

- A. The Work shall be conducted in multiple phases as indicated on drawings.
- B. Before commencing Work of each phase, submit a schedule showing the sequence, commencement and completion dates, and move-out and -in dates of Owner's personnel for all phases of the Work.

1.07 WORK UNDER OTHER CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

- A. Section 00 50 00 - Contracting Forms and Supplements: Forms to be used.

1.03 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
 - 4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
 - 5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract as described in Division 01 Section "Summary."
- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
 - 1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Name of Architect.
 - c. Architect's project number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 - 2. Arrange schedule of values consistent with format of AIA Document G703 .
 - 3. Arrange the schedule of values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

- 1) Labor.
- 2) Materials.
- 3) Equipment.
4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with Project Manual table of contents. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - a. Include separate line items under Contractor and principal subcontracts for LEED documentation and other Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
7. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
9. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate owner payments or deposits, if any, and balance to be paid by Contractor.
10. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
11. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. For each item, provide a column for listing each of the following:
 1. Item Number.
 2. Description of work.
 3. Previous Applications.
 4. Work in Place and Stored Materials under this Application.
 5. Authorized Change Orders.
 6. Total Completed and Stored to Date of Application.
 7. Percentage of Completion.
 8. Balance to Finish.
 9. Retainage.
- D. Execute certification by signature of authorized officer. Applications shall be notarized. Architect will return incomplete applications without action.
 1. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
 2. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.
 3. Submit electronic copies of each Application for Payment.

- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
 - 1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 - 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 - 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
 - 1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 - 2. When an application shows completion of an item, submit final or full waivers.
 - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 4. Waivers: Submit each Application for Payment with Contractor's waiver of mechanic's lien for construction period covered by the application.
 - 5. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1. List of subcontractors.
 - 2. Schedule of Values.
 - 3. Contractor's Construction Schedule (preliminary if it's not final).
 - 4. Schedule of unit prices, if applicable.
 - 5. Submittals Schedule (preliminary if not final).
 - 6. List of Contractor's staff assignments.
 - 7. Copies of building permits.
 - 8. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 - 9. Certificates of insurance and insurance policies.
 - 10. Performance and Payment Bonds.
 - 11. Information required for Owner's insurance.
- H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including but not limited to the following:
 - 1. Evidence of completion of Project closeout requirements.

2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Removal of temporary facilities and services.
10. Change of door locks to Owner's access.

1.05 MODIFICATION PROCEDURES

- A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on "Architect's Instruction to Contractor" (ITC) form.
- B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor by ITC.
- C. Owner-Initiated Proposal Requests or ITC's: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 1. Proposal Requests or ITC's issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 2. Within 14 days after receipt of Proposal Request or ITC, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- D. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
 2. Promptly execute the change.
- E. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 7 days.
- F. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation.
 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the

- proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
- G. Allowances:
1. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
 - a. Include installation costs in purchase amount only where indicated as part of the allowance.
 - b. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
 - c. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
 - d. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count
 2. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit. Submit claims within 21 days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Owner will reject claims submitted later than 21 days after such authorization.
 - a. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
 - b. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.
- H. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
1. For change requested by Architect for work falling under a fixed price contract, the 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 be based on the fixed unit prices.
- I. Substantiation of Costs: Provide full information required for evaluation.
1. Provide following data:
 - a. Quantities of products, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Overhead and profit.
 - d. Justification for any change in Contract Time.
 - e. Credit for deletions from Contract, similarly documented.

2. 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.
- J. Execution of Change Orders: On Owner's approval of Proposal Request, ITC, or Contractor's Proposal, Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- K. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- L. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- M. Promptly enter changes in Project Record Documents.

1.06 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 21 00
ALLOWANCES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Contingency allowance.

1.02 CONTINGENCY ALLOWANCE

- A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- B. Funds will be drawn from the Contingency Allowance only by Change Order.
- C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.03 ALLOWANCES SCHEDULE

- A. Communications and Electrical System Allowance: Include the stipulated sum of \$15,000 for Phase 0 revisions to the communications and electrical systems necessitated by functional changes or workstation layout changes required over the Phase 0 period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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**SECTION 01 25 00
SUBSTITUTION PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

- A. Section 00 21 13 - Instructions to Bidders: Restrictions on timing of substitution requests.
- B. Section 00 43 25 - Substitution Request Form - During Procurement: Required form for substitution requests made before end of Bidding/Negotiation Phase (During Bidding).

1.03 DEFINITIONS

- A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
 - 1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
 - a. Unavailability.
 - 2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
 - a. Substitution requests offering advantages solely to the Contractor will not be considered.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
 - 2. Agrees to provide the same warranty for the substitution as for the specified product.
 - 3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
 - 4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
 - 5. Waives claims for additional costs or time extension that may subsequently become apparent.
- B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
- C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
- D. Limit each request to a single proposed substitution item.
 - 1. Submit an electronic document, combining the request form with supporting data into single document.

3.02 SUBSTITUTION PROCEDURES DURING BIDDING

- A. Instructions to Bidders specifies time restrictions for submitting requests for substitutions during the bidding period, and the documents required.
- B. Submittal Form:
 - 1. Submit substitution requests by completing the form in Section 00 43 25. See this form for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION (AFTER BIDDING PHASE)

- A. Submittal Form (after award of contract):
 - 1. Submit substitution requests by completing form provided by Architect. Use only this form; other forms of submission are unacceptable.
- B. Architect will consider requests for substitutions only within 15 days after date of Agreement.
- C. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
- D. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
 - 1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
 - 2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
 - 3. Bear the costs engendered by proposed substitution of:
 - a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
 - b. Other unanticipated project considerations.
- E. Substitutions will not be considered under one or more of the following circumstances:
 - 1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
 - 2. Without a separate written request.
 - 3. When acceptance will require revisions to Contract Documents.
 - 4. When there is no Project cost savings or Project time savings associated with the substitution.

3.04 RESOLUTION

- A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
- B. Architect will notify Contractor in writing of decision to accept or reject request.

END OF SECTION

**SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electronic document submittal service.
- B. Release of CAD/BIM files.
- C. Preconstruction meeting.
- D. Site mobilization meeting.
- E. Progress meetings.
- F. Construction progress schedule.
- G. Coordination drawings.
- H. Requests for Information (RFI)
- I. Electronic submittal procedures.
- J. Submittal procedures.

1.02 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 ELECTRONIC DOCUMENT SUBMITTAL SERVICE

- A. All documents transmitted for purposes of administration of the contract are to be in electronic (PDF, MS Word, or MS Excel) format, as appropriate to the document, 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 Interpretation (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 and Architect are required to use this service.
 - 3. It is Contractor's responsibility to submit documents in allowable format.
 - 4. Subcontractors, suppliers, and Architect's consultants are to be permitted to use the service at no extra charge.
 - 5. Users of the 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), unless such software capability is provided by the service provider.
 - 6. Paper document transmittals will not be reviewed; emailed electronic documents will not be reviewed.
 - 7. All other specified submittal and document transmission procedures apply, except that electronic document requirements do not apply to samples or color selection charts.
 - a. Contractor shall upload photos showing samples/manufacturer's label and plan designations as well as provide physical copies as specified in this section.
- B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the Contract Sum.
- C. Submittal Service: The selected service is:
 - 1. Submittal Exchange (tel: 1-800-714-0024): www.submittalexchange.com/#sle.
 - 2. Procore (tel: 1-866-477-6267): www.procore.com.
- D. Training: One, one-hour, web-based training session will be arranged for all participants, with representatives of Architect and Contractor participating; further training is the responsibility of the user of the service.
- E. Project Closeout: Architect will determine when to terminate the service for the project and is responsible for obtaining archive copies of files for Owner.

3.02 RELEASE OF CAD/BIM FILES

- A. Contractors may request plans for their use/benefit for assistance in preparing submittals or for use in construction.
 - 1. 2D PDF drawing files of individual sheets may be obtained at no charge to the Contractor.
 - 2. 2D CAD drawings of individual sheets will be available at a charge per sheet to the Contractor
 - 3. A signed Electronic File Transfer release / waiver form is required for all files released to Contractors.
 - 4. BIM (Models) are not considered a portion of the Contract Documents and release of the design Models in native file format or in translation format will not be provided.

3.03 MEETINGS, GENERAL

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled

meeting dates and times.

2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, and Architect, within three days of the meeting.

3.04 PRECONSTRUCTION MEETING

- A. Owner will schedule a meeting after Notice of Award.
- B. General Contractor shall schedule and conduct a preconstruction meeting before starting construction, at a time convenient to Owner and Architect, but not later than 15 days after execution of the Agreement.
 1. Conduct the conference to review responsibilities and personnel assignments.
 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Lines of communications.
 - f. Procedures for processing field decisions and Change Orders.
 - g. Procedures for RFIs.
 - h. Procedures for testing and inspecting.
 - i. Procedures for processing Applications for Payment.
 - j. Distribution of the Contract Documents.
 - k. Submittal procedures.
 - l. Preparation of record documents.
 - m. Use of the premises.
 - n. Work restrictions.
 - o. Working hours.
 - p. Owner's occupancy requirements.
 - q. Responsibility for temporary facilities and controls.
 - r. Procedures for moisture and mold control.
 - s. Procedures for disruptions and shutdowns.
 - t. Construction waste management and recycling.
 - u. Parking availability.
 - v. Office, work, and storage areas.
 - w. Equipment deliveries and priorities.
 - x. First aid.
 - y. Security.
 - z. Progress cleaning.
- C. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.05 SITE MOBILIZATION MEETING

- A. Attendance Required:
 1. Contractor.
 2. Owner.
 3. Architect.
 4. Contractor's superintendent.
 5. Major Subcontractors.

- B. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements.
 - 3. Temporary utilities provided by Owner.
 - 4. Security and housekeeping procedures.
 - 5. Waste Management Plan.
 - 6. Schedules.
 - 7. Application for payment procedures.
 - 8. Procedures for testing.
 - 9. Procedures for maintaining record documents.
 - 10. Requirements for start-up of equipment.
 - 11. Inspection and acceptance of equipment put into service during construction period.
- C. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.06 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at weekly intervals.
- B. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting. All participants at the meeting shall be familiar with Project and authorized to conclude matters regarding the Work.
- C. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project and as follows:
 - 1. Review minutes of previous meetings.
 - 2. Review of work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems that impede, or will impede, planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Quality and work standards.
 - 7. Status of RFI's.
 - 8. Status of proposal requests.
 - 9. Pending changes,
 - 10. Status of Change Orders.
 - 11. Maintenance of progress schedule.
 - 12. Corrective measures to regain projected schedules.
 - 13. Planned progress during succeeding work period.
 - 14. Coordination of projected progress.
 - 15. Maintenance of quality and work standards.
 - 16. Effect of proposed changes on progress schedule and coordination.
 - 17. Other business relating to work.
- D. Record minutes and distribute copies within three days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.07 CONSTRUCTION PROGRESS SCHEDULE - SEE SECTION 01 32 16

- A. Within 10 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. Submit updated schedule with each Application for Payment.

3.08 COORDINATION DRAWINGS

- A. Provide information required for preparation of coordination drawings. Complete information on a single drawing illustrating the following proposed materials and mounting heights:
 - 1. Architectural walls and ceiling materials. Identify ceiling heights.

2. Structural framing and other structural elements above the proposed ceiling line. Identify sizes of structural members. Identify bottom of structure.
 3. Mechanical ductwork (two line diagrams) and equipment. Identify size of ductwork and equipment. Identify top and bottom of ductwork and equipment.
 4. Plumbing supply and drain lines. Identify size of plumbing lines. Identify bottom of piping. Identify top and bottom of piping at crossovers with other elements.
 5. Fire protection piping lines. Identify size of plumbing lines. Identify bottom of piping. Identify top and bottom of piping at crossovers with other elements.
 6. Electrical equipment mounted above the ceiling. Identify top and bottom side of equipment.
 7. Locations of recessed light fixtures. Identify top of fixture.
 8. Identify top and bottom side of equipment.
 9. Data cable trays and equipment mounted above the ceiling. Identify bottom of cable trays.
 10. Identify access panels necessary for equipment access or maintenance.
 11. Identify other elements requiring above ceiling coordination.
- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within ceiling plenum to accommodate layout of light fixtures indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Fire-rated enclosures around ductwork.
 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switch board, switchgear, transformer, busway, generator, and motor control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
- C. Review drawings prior to submission to Architect.
- D. Architect Review: Architect will review coordination drawings to confirm that the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make changes as directed and resubmit.

3.09 REQUESTS FOR INFORMATION (RFI)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
 - 1. Architect will return RFIs submitted to Architect by other entities controlled by Contractor with no response.
 - 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
 - 1. Project name.
 - 2. Project number.
 - 3. Date.
 - 4. Name of Contractor.
 - 5. Name of Architect.
 - 6. RFI number, numbered sequentially.
 - 7. RFI subject.
 - 8. Specification Section number and title and related paragraphs, as appropriate.
 - 9. Drawing number and detail references, as appropriate.
 - 10. Field dimensions and conditions, as appropriate.
 - 11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 - 12. Contractor's signature.
 - 13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: AIA Document G716 or other form acceptable to or provided by Architect.
 - 1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven working days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
 - 1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 - 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt of additional information.
 - 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit a change proposal.
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
 - 1. Project name.
 - 2. Name and address of Contractor.
 - 3. Name and address of Architect.
 - 4. RFI number including RFIs that were returned without action or withdrawn.

5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
- F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

3.10 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
1. Product data.
 2. Shop drawings.
 3. Samples for selection.
 4. Samples for verification.
- 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. Samples will be reviewed for aesthetic, color, or finish selection.
- 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.

3.11 SUBMITTALS FOR INFORMATION

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, and telephone number of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, office, and cellular telephone numbers and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Post copies of list in project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.
- C. When the following are specified in individual sections, submit them for information:
1. Design data.
 2. Certificates.
 3. Test reports.
 4. Inspection reports.
 5. Manufacturer's instructions.
 6. Manufacturer's field reports.
 7. Other types indicated.
- D. Submit for Architect's knowledge as contract administrator or for Owner.

3.12 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.

- B. Submit Final Correction Punch List for Substantial Completion.
- C. Submit for Owner's benefit during and after project completion.

3.13 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 - 1. Submit submittals electronically via electronic submittal service as PDF electronic files.
 - 2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 - 2. Mark each copy of each submittal to show which products and options are applicable.
 - 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 - 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 - 5. Submit Product Data before or concurrent with Samples.
 - 6. Submit Product Data in the following format:
 - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 - 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 - 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
 - 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.

- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will retain two sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.

- F. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- G. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- H. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- I. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- J. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- K. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- L. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- M. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- N. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- O. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- P. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- Q. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- R. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

3.14 ADDITIONAL SUBMITTAL PROCEDURES

- A. General Requirements:
1. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 2. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 3. 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.
 4. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Upload submittals in electronic form to Electronic Document Submittal Service website.
 5. Schedule submittals to expedite the Project, and coordinate submission of related items.
 6. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 7. Provide space for Contractor and Architect review stamps.
 8. When revised for resubmission, identify all changes made since previous submission.
 9. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 10. Submittals not requested will not be recognized or processed.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
 5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

3.15 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. Architect's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved".
 - b. "Approved as Noted."
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".

- 1) Resubmit revised item, with review notations acknowledged and incorporated.
 - b. "Not Approved".
 - 1) Submit item 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. "For Record Only" - 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. Preliminary schedule.
- B. Construction progress schedule, bar chart type.
- C. Construction reports.

1.02 SUBMITTALS

- A. Within 10 days after date of Agreement, submit preliminary schedule.
- B. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
- C. Within 10 days after joint review, submit complete schedule.
- D. Submit updated schedule with each Application for Payment.

1.03 SCHEDULE FORMAT

- A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.

PART 2 PRODUCTS - NOT USED

2.01 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice of Award to date of final completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 14 days, unless specifically allowed by Architect.
 - 2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
 - 4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 - 6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Phasing: Arrange list of activities on schedule by phase.
 - 2. Work under More Than One Contract: Include a separate activity for each contract.
 - 3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
 - 4. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.

- c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Provisions for future construction.
 - g. Seasonal variations.
 - h. Environmental control.
5. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
- a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.
 - f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Building flush-out.
 - m. Startup and placement into final use and operation.
6. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
7. Other Constraints: Insert constraints not indicated elsewhere.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.
- 1. Temporary enclosure and space conditioning.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
- 1. Unresolved issues.
 - 2. Unanswered Requests for Information.
 - 3. Rejected or unreturned submittals.
 - 4. Notations on returned submittals.
 - 5. Pending modifications affecting the Work and Contract Time.
- G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- H. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

2.02 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. List of separate contractors at Project site.
 - 3. Approximate count of personnel at Project site.
 - 4. Equipment at Project site.
 - 5. Material deliveries.
 - 6. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 7. Accidents.
 - 8. Meetings and significant decisions.
 - 9. Unusual events (see special reports).
 - 10. Stoppages, delays, shortages, and losses.
 - 11. Meter readings and similar recordings.
 - 12. Emergency procedures.
 - 13. Orders and requests of authorities having jurisdiction.
 - 14. Change Orders received and implemented.
 - 15. Construction Change Directives received and implemented.
 - 16. Services connected and disconnected.
 - 17. Equipment or system tests and startups.
 - 18. Partial completions and occupancies.
 - 19. Substantial Completions authorized.

PART 3 EXECUTION

3.01 PRELIMINARY SCHEDULE

- A. Prepare preliminary schedule in the form of a horizontal bar chart.

3.02 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and other logically grouped activities.
- D. Provide sub-schedules for each phase of Work identified in the Phasing Drawings.
- E. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- F. Provide legend for symbols and abbreviations used.

3.03 BAR CHARTS

- A. Include a separate bar for each major portion of Work or operation.
- B. Identify the first work day of each week.

3.04 REVIEW AND EVALUATION OF SCHEDULE

- A. Participate in joint review and evaluation of schedule with Architect at each submittal.
- B. Evaluate project status to determine work behind schedule and work ahead of schedule.
- C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.05 UPDATING SCHEDULE

- A. Maintain schedules to record actual start and finish dates of completed activities.
- B. Indicate progress of each activity to date of revision, with projected completion date of each activity.
- C. Annotate diagrams to graphically depict current status of Work.

- D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.
- E. Indicate changes required to maintain Date of Substantial Completion.
- F. Submit reports required to support recommended changes.

3.06 DISTRIBUTION OF SCHEDULE

- A. Distribute copies of updated schedules to Contractor's project site file, to subcontractors, suppliers, Architect, Owner, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

END OF SECTION

**SECTION 01 33 00
SUBMITTAL PROCEDURES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals for review, information, and project closeout.

1.02 RELATED REQUIREMENTS

- A. Section 01 31 00 - Project Management & Coordination: Electronic document and submittal service.

1.03 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's construction schedule.
 - 2. Preparation of the schedule of values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
 - 1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 RELEASE OF CAD/BIM FILES

- A. Contractors may request plans for their use/benefit for assistance in preparing submittals or for use in construction.
 - 1. 2D PDF drawing files of individual sheets may be obtained at no charge to the Contractor.
 - 2. 2D CAD drawings of individual sheets will be available at a charge per sheet to the Contractor

3. A signed Electronic File Transfer release / waiver form is required for all files released to Contractors.
4. BIM (Models) are not considered a portion of the Contract Documents and release of the design Models in native file format or in translation format will not be provided.

3.02 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 1. Product data.
 2. Shop drawings.
 3. Samples for selection.
 4. Samples for verification.
- B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below.

3.03 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 1. Design data.
 2. Certificates.
 3. Test reports.
 4. Inspection reports.
 5. Manufacturer's instructions.
 6. Manufacturer's field reports.
 7. Other types indicated.

3.04 SUBMITTALS FOR PROJECT CLOSEOUT

- A. Submit Correction Punch List for Substantial Completion.
- B. Submit Final Correction Punch List for Substantial Completion.
- C. Submit for Owner's benefit during and after project completion.

3.05 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
 1. Submit electronic submittals via email as PDF electronic files.
 2. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - a. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.
 - b. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.

- d. Statement of compliance with specified referenced standards.
- e. Testing by recognized testing agency.
- f. Application of testing agency labels and seals.
- g. Notation of coordination requirements.
- h. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams showing factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
 - a. PDF electronic file.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.
 - g. Seal and signature of professional engineer if specified.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
 3. Submit Shop Drawings in the following format:
 - a. PDF electronic file.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
 1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 - e. Specification paragraph number and generic name of each item.
 3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

- a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
 - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
 1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
 5. Submit product schedule in the following format:
 - a. PDF electronic file.
- F. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- G. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- H. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- I. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- J. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- K. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- L. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- M. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or

on comprehensive tests performed by a qualified testing agency.

- N. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - 1. Name of evaluation organization.
 - 2. Date of evaluation.
 - 3. Time period when report is in effect.
 - 4. Product and manufacturers' names.
 - 5. Description of product.
 - 6. Test procedures and results.
 - 7. Limitations of use.
- O. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- P. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- Q. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- R. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

3.06 ADDITIONAL SUBMITTAL PROCEDURES

- A. General Requirements:
 - 1. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
 - 2. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
 - 3. 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.
 - 4. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
 - a. Upload submittals in electronic form to Electronic Document Submittal Service website.
 - 5. Schedule submittals to expedite the Project, and coordinate submission of related items.
 - 6. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
 - 7. Provide space for Contractor and Architect review stamps.
 - 8. When revised for resubmission, identify all changes made since previous submission.
 - 9. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
 - 10. Submittals not requested will not be recognized or processed.
- B. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.
4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 days for initial review of each submittal.
5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.

3.07 SUBMITTAL REVIEW

- A. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
- D. Architect's and consultants' actions on items submitted for review:
 1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved", or language with same legal meaning.
 - b. "Approved as Noted", or language with same legal meaning.
 - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 2. Not Authorizing fabrication, delivery, and installation:
 - a. "Revise and Resubmit".
 - 1) Resubmit revised item, with review notations acknowledged and incorporated.
 - 2) Non-responsive resubmittals may be rejected.
 - b. "Not Approved".
 - 1) Submit item 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. "For Record Only" - to notify the Contractor that the submittal has been received for record only.

END OF SECTION

**SECTION 01 40 00
QUALITY REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittals.
- B. References and standards.
- C. Testing and inspection agencies and services.
- D. Control of installation.
- E. Tolerances.
- F. Defect Assessment.

1.02 RELATED REQUIREMENTS

- A. Section 01 42 16 - Definitions.

1.03 SUBMITTALS

- A. Test Reports: After each test/inspection, promptly submit two copies of report to Architect and to Contractor.
- B. 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.
- C. 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.
- D. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
 - 1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the contract documents.

1.04 REFERENCES AND STANDARDS

- A. For products and workmanship specified by reference to a document or documents not included in the 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 the Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING AND INSPECTION AGENCIES AND SERVICES

- A. Owner will employ and pay for services of an independent testing agency to perform specified testing and inspections.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF 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 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 products to appropriate dimensions; position before securing products in place.

3.03 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
 2. Perform specified sampling and testing of products in accordance with specified standards.
 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
 5. Perform additional tests and inspections required by Architect.
 6. 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. Cooperate with laboratory personnel, and provide access to the Work.
 - 2. 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.
 - 3. Notify Architect, Owner and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 - 4. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 - 5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.
- F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.04 DEFECT ASSESSMENT

- A. Replace Work or portions of the Work not complying with specified requirements.

3.05 REPAIR AND PROTECTION

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

END OF SECTION

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**SECTION 01 42 16
DEFINITIONS**

PART 1 GENERAL

1.01 SUMMARY

- A. This section supplements the definitions contained in the General Conditions.
- B. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

- A. Approved: When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- B. Directed: A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed".
- C. Furnish: To supply, deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operation.
- D. Indicated: Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. Install: To unload, temporarily store, unpack, assemble, erect, apply, place, anchor, work to dimensions, finish, cure, protect, clean, start up, and make ready for use.
- F. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.
- G. Project Site: Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.
- H. Provide: To furnish and install, complete and ready for the intended use.
- I. Regulations: Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- J. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary telecommunications services.
- C. Temporary sanitary facilities.
- D. Vehicular access and parking.
- E. Waste removal facilities and services.
- F. Project identification sign.
- G. Field offices.

1.02 INFORMATIONAL SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
- B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.
- C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- D. Moisture Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
 - 1. Describe delivery, handling and storage provisions for materials subject to water absorption or water damage.
 - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
 - 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- E. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste handling procedures.
 - 5. Other dust-control measures.

1.03 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical power, consisting of connection to existing facilities.
 - 2. Water supply, consisting of connection to existing facilities.
 - 3. Sewer service, consisting of connection to existing facilities.
- B. Provide and pay for all heating and cooling and ventilation required for construction purposes.
 - 1. Do not use Owner's electrical power for heating, cooling and ventilation during construction.
- C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.04 TELECOMMUNICATIONS SERVICES

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
 - 1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
 - 2. Internet Connections: Minimum of one; DSL modem or faster.
 - 3. Email: Account/address reserved for project use.

1.05 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

1.06 EXTERIOR ENCLOSURES

- A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.07 INTERIOR ENCLOSURES

- A. Provide temporary partitions as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.

1.08 VEHICULAR ACCESS AND PARKING

- A. Coordinate access and haul routes with governing authorities and Owner.
- B. Provide and maintain access to fire hydrants, free of obstructions.
- C. Provide means of removing mud from vehicle wheels before entering streets.
- D. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.09 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Project shall generate the least amount of trash and waste possible.
- C. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.
- D. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.
- E. Provide containers with lids. Remove trash from site periodically.
- F. Recycle or Salvage as much waste as possible, including, but not limited to:
 - 1. Aluminum and plastic beverage containers.
 - 2. Corrugated cardboard.
 - 3. Wood pallets.
 - 4. Clean dimensional wood.
 - 5. Metals, including packaging banding, metal studs, sheet metal, structural steel, piping,
 - 6. reinforcing bars, door frames, and other items made of steel, iron, galvanized steel,
 - 7. stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
 - 8. Glass.
 - 9. Gypsum drywall and plaster.
 - 10. Plastic buckets.

11. Carpet, carpet cushion, carpet tile, and carpet remnants, both new and removed: DuPont (<http://flooring.dupont.com>) and Interface (www.interfaceinc.com) conduct reclamation programs.
 12. Fluorescent lamps (light bulbs).
 13. Acoustical ceiling tile and panels.
- G. If materials to be recycled or re-used 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.
- H. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.10 PROJECT IDENTIFICATION

- A. Provide project identification sign of design and construction indicated on drawings.
- B. Erect on site at location indicated.
- C. No other signs are allowed without Owner permission except those required by law.

1.11 FIELD OFFICES

- A. Field Office: Prefabricated or mobile units, 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 10 persons.
- C. Locate offices a minimum distance of 30 feet from existing and new structures.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND 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 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.

PART 2 PRODUCTS - NOT USED

2.01 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposure.

PART 3 EXECUTION - NOT USED

3.01 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 1. Arrange with utility company, Owner and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- C. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- D. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low

temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

- E. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 - 1. Connect temporary service to Owner's existing power source, as directed by Owner.
- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
- I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install one telephone line for each field office.
 - 1. At each telephone, post a list of important telephone numbers:
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Engineer's office.
 - g. Owner's office.
 - h. Principal subcontractors' field and home offices.
 - 2. Provide superintendent with cellular telephone when away from field office.

3.03 SUPPORT FACILITIES INSTALLATION

- A. Temporary Use of Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
- B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
- C. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 - 2. Remove snow and ice as required to minimize accumulations.
- D. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.04 SECURITY AND PROTECTION OF FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- C. Temporary Erosion and Sedimentation Control: Comply with requirements specified.

- D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- E. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
- F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- G. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- H. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate occupied areas from fumes and noise.
- I. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
- J. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.

END OF SECTION

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**SECTION 01 60 00
PRODUCT REQUIREMENTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

1.02 RELATED REQUIREMENTS

- A. Section 01 25 00 - Substitution Procedures: Substitutions made during procurement and/or construction phases.

1.03 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchases for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 - 3. Comparable Products: Product that is demonstrated and approved, prior to bid, through substitution process, to have qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that are equal to or exceed those of the specified products.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.04 SUBMITTALS

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. 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.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

- A. Provide new products unless specifically required or permitted by the Contract Documents.

2.02 MAINTENANCE MATERIALS

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- B. Deliver to Project site; obtain receipt prior to final payment.

2.03 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
 - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 - 2. Specified Form: When specified forms are include with the Specifications, prepare a written document using indicated from properly executed.
 - 3. Refer to Divisions 02 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.

PART 3 EXECUTION

3.01 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Where products are accompanied by the term "as selected," Architect will make selection.
 - 4. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
 - 1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless approved by the Architect prior to bid.
 - 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - 3. Basis-of Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product, that meets or exceeds the characteristics of the basis-of-design product, by one of the other named manufacturers. Drawings and specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Designation as an acceptable comparable manufacturer does not signify acceptance of a specific product by that manufacturer unless it is deemed, by the Architect, as meeting or exceeding the characteristics of the basis-of-design product.
 - a. Construction Document design is based on the basis-of-design product listed, if a comparable product from another named manufacturer is proposed, the Architect shall consider the Contractor's selection of a comparable product when the following conditions are satisfied. If all of the following conditions are not satisfied, Architect will

return requests without action, except to record non-compliance with these requirements:

- 1) Selected comparable product must be from one of the manufacturer's listed as an acceptable manufacturer in the specifications.
 - 2) Evidence that the selected comparable product does not require extensive revisions to the Contract Documents and will produce the indicated results, and that it is compatible with other portions of work.
 - 3) Detailed comparison of significant qualities of proposed comparable product with the basis-of-design product named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - 4) Evidence that comparable product provides warranty which meets or exceeds that specified.
 - 5) List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 - 6) Samples, if requested.
- b. Products by unnamed manufacturers will only be considered prior to bid. Comply with "Comparable Product Requests" paragraphs for consideration of comparable products.
- c. Where a list of manufacturers is not provided, comply with "Comparable Product Requests" paragraphs for consideration of comparable products. Comparable product request will only be considered prior to bid.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample" provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

3.02 SUBSTITUTION LIMITATIONS

- A. See Section 01 25 00 - Substitution Procedures.
- B. Submit substitution request on Substitution Request Form provided in the Specification Manual.
 1. Notification of approved substitutions shall be provided by Addendum.
 2. Use product specified if Architect does not issue a decision on use of a substitution request within time allocated.

3.03 COMPARABLE PRODUCT REQUESTS

- A. Submit request for consideration of each comparable product during the bidding period complying with same time restriction as substitutions, using same form as substitution requests. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within three days of receipt of request.
 2. Notification of approved substitutions shall be provided by Addendum.
 3. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

3.04 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage, deterioration, and loss, including theft and vandalism to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.05 STORAGE AND PROTECTION

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication. See Section 01 74 19.
- B. Store and protect products in accordance with manufacturers' 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. Comply with manufacturer's warranty conditions, if any.
- 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.

END OF SECTION

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, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
- C. Cutting and patching.
- D. Laying out the Work.
- E. Cleaning and protection.
- F. Starting of systems and equipment.
- G. Demonstration and instruction of Owner personnel.
- H. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- I. General requirements for maintenance service.

1.02 RELATED REQUIREMENTS

- A. Section 01 79 00 - Demonstration and Training: Demonstration of products and systems to be commissioned and where indicated in specific specification sections
- B. Section 07 84 00 - Firestopping.

1.03 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. 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.
 - 5. Work of Owner or separate Contractor.
 - 6. Include in request:
 - a. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 - b. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 - c. Products: List products to be used for patching and firms or entities that will perform patching work.
 - d. Dates: Indicate when cutting and patching will be performed.
 - e. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
 - 1) Include description of provisions for temporary services and systems during interruption of permanent services and systems.

1.05 QUALIFICATIONS

- A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

1.06 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 - 1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 - 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Mechanical systems piping and ducts.
 - f. Control systems.
 - g. Communication systems.
 - h. Fire-detection and -alarm systems.
 - i. Conveying systems.
 - j. Electrical wiring systems.
 - k. Operating systems of special construction.
 - 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Exterior curtain-wall construction.
 - d. Sprayed fire-resistive material.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels, and equipment.
 - g. Noise- and vibration-control elements and systems.
 - 4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- B. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

1.07 PROJECT CONDITIONS

- A. Use of explosives is not permitted.
- B. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- C. 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 barriers between construction areas and areas continuing to be occupied by Owner.
- D. Pest and Rodent Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
- E. 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.

1.08 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. 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.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of work of separate sections.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

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. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that 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.
- G. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
 - 1. Description of the Work.
 - 2. List of detrimental conditions, including substrates.
 - 3. List of unacceptable installation tolerances.
 - 4. Recommended corrections.
- H. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.02 PREPARATION

- A. Existing Utility Information: Furnish information to [local utility] [Owner] that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Clean substrate surfaces prior to applying next material or substance.
- E. Seal cracks or openings of substrate prior to applying next material or substance.
- F. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 LAYING OUT THE WORK

- A. Verify locations of survey control points prior to starting work.
- B. Promptly notify Architect of any discrepancies discovered.
- C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- D. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- E. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.
- F. Utilize recognized engineering survey practices.
- G. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.

3.04 GENERAL INSTALLATION REQUIREMENTS

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

- B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- C. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- D. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- E. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- F. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- G. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- H. Make neat transitions between different surfaces, maintaining texture and appearance.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.05 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. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
 - 2. Relocate items indicated on drawings.
 - 3. 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.
 - 4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems 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. Provide temporary connections as required to maintain existing systems in service.
 4. Verify that abandoned services serve only abandoned facilities.
 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; patch holes left by removal using materials specified for new construction.
- D. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- F. 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.
- G. Refinish existing surfaces as indicated:
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.
- H. Clean existing systems and equipment.
- I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

3.06 CUTTING AND PATCHING

- A. Whenever possible, execute the work by methods that avoid cutting or patching.
- B. See Alterations article above for additional requirements.
- C. Perform whatever cutting and patching is necessary to:
 1. Complete the 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. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- F. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- G. Temporary Support: Provide temporary support of work to be cut.

- H. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.
- I. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- J. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- K. Restore work with new products in accordance with requirements of Contract Documents.
- L. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- M. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
- N. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
 - 1. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 - 2. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 - 3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
 - 4. 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.
 - 5. Match color, texture, and appearance.
 - 6. 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.

3.07 PROTECTION OF INSTALLED WORK

- A. Protect installed work from damage by construction operations.

- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- F. 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.
- G. Prohibit traffic from landscaped areas.
- H. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.08 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F (27 deg C).
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.
- B. Site: Maintain Project site free of waste materials and debris.
 - 1. Mow grass and weed growth areas to keep growth maintained.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.09 SYSTEM STARTUP

- A. Coordinate schedule for start-up of various equipment and systems.
- B. 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.
- C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify that wiring and support components for equipment are complete and tested.
- E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.10 DEMONSTRATION AND INSTRUCTION

- A. See Section 01 79 00 - Demonstration and Training.
- B. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.

3.11 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

3.12 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Wipe surfaces of mechanical and electrical equipment[, elevator equipment,] and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

- m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - p. Leave Project clean and ready for occupancy.
- C. Use cleaning materials that are nonhazardous.
 - D. 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.
 - E. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
 - F. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
 - G. Clean filters of operating equipment.
 - H. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
 - I. Clean site; sweep paved areas, rake clean landscaped surfaces.
 - J. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

- A. 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.
- B. Substantial Completion Procedures
 - 1. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
 - 2. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - a. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - b. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
 - c. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - d. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
 - 1) Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section.
 - e. Submit test/adjust/balance records.
 - f. Submit sustainable design submittals required in Division 01 sustainable design requirements Section and in individual Division 02 through 33 Sections.

- g. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 3. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
 - a. Advise Owner of pending insurance changeover requirements.
 - b. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 - c. Complete startup and testing of systems and equipment.
 - d. Perform preventive maintenance on equipment used prior to Substantial Completion.
 - e. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."
 - f. Advise Owner of changeover in heat and other utilities.
 - g. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 - h. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 - i. Complete final cleaning requirements, including touchup painting.
 - j. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
 4. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect's punch list, that must be completed or corrected before certificate will be issued.
 - a. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 - b. Results of completed inspection will form the basis of requirements for final completion.
- C. 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.
- D. Final Completion Procedures:
 1. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
 - a. Submit a final Application for Payment according to Division 01 Section "Price and Payment Procedures."
 - b. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 - c. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 - d. Submit pest-control final inspection report and warranty.
 - e. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 2. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

- a. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
- E. List of Incomplete Items (Punch List)
 - 1. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - a. Organize list of spaces in sequential order.
 - b. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

3.14 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

3.15 MAINTENANCE

- A. Provide service and maintenance of components indicated in specification sections.
- 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

**SECTION 01 78 00
CLOSEOUT SUBMITTALS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Data.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
- B. Operation and Maintenance Data:
 - 1. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Submit one copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
 - 4. Submit a set of revised final documents in final form within 10 days after final inspection.
- C. Warranties and Bonds:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
- B. Record Prints:
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.

- d. Record and check the markup before enclosing concealed installations.
- e. Cross-reference record prints to corresponding archive photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- C. Ensure entries are complete and accurate, enabling future reference by Owner.
- D. Store record documents separate from documents used for construction.
- E. Record information concurrent with construction progress.
- F. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alternates utilized.
 3. Changes made by Addenda and modifications.
- G. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

3.02 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 1. Product data, with catalog number, size, composition, and color and texture designations.
- 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. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.03 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 1. Description of unit or system, and component parts.
 2. Identify function, normal operating characteristics, and limiting conditions.
 3. Include performance curves, with engineering data and tests.

4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. 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.
- D. 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.
- E. Provide servicing and lubrication schedule, and list of lubricants required.
- F. Include manufacturer's printed operation and maintenance instructions.
- G. Include sequence of operation by controls manufacturer.
- H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- I. Additional Requirements: As specified in individual product specification sections.

3.04 ASSEMBLY OF OPERATION AND 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. Operation and Maintenance Manual Electronic File: Assemble complete operation and maintenance manual submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- C. Where systems involve more than one specification section, provide separate linked dividers for each system.
- D. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- 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 using the same identification as on the divider tabs; 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. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
 1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Photocopies of warranties and bonds.

3.05 WARRANTIES AND 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 when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- F. 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.
- G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
- H. 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.
- I. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

END OF SECTION

**SECTION 01 79 00
DEMONSTRATION AND TRAINING**

PART 1 GENERAL

1.01 SUMMARY

- A. Demonstration of products and systems where indicated in specific specification sections.

1.02 RELATED REQUIREMENTS

- A. Section 01 78 00 - Closeout Submittals: Operation and maintenance manuals.
- B. Other Specification Sections: Additional requirements for demonstration and training.

1.03 QUALITY ASSURANCE

- A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
 - 1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
 - 2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

- A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.
- B. Demonstration may be combined with Owner personnel training if applicable.
- C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.
 - 2. For equipment or systems requiring seasonal operation, perform demonstration for other season within three months.
- D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
 - 1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

- A. Conduct training on-site unless otherwise indicated.
- B. Training schedule will be subject to availability of Owner's personnel to be trained; 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.
- C. Product- and System-Specific Training:
 - 1. Review the applicable O&M manuals.
 - 2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
 - 3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
 - 4. Provide hands-on training on all operational modes possible and preventive maintenance.
 - 5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
 - 6. Discuss common troubleshooting problems and solutions.
 - 7. Discuss any peculiarities of equipment installation or operation.

8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
 9. Review recommended tools and spare parts inventory suggestions of manufacturers.
 10. Review spare parts and tools required to be furnished by Contractor.
 11. Review spare parts suppliers and sources and procurement procedures.
- D. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

**SECTION 02 03 42
REMOVAL AND REINSTALLATION OF WALL SCULPTURE ART**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Work included removal, protection, storage and reinstallation of existing wall sculpture art.

1.02 SUBMITTALS

- A. Product data for clear coat finish product.
- B. Documentation of existing wall art sculpture layout and anchor points, including photos, scans, videos, etc.
- C. Layout Drawing: Provide layout drawings showing each piece of sculpture and anchor points, and designation of each piece for labeling of each piece prior to storage.
- D. Work Plan: Detailed, proposed instructions for procedures for accomplishment of removal work, including detailed description of the methods and equipment to be used and sequence of operations. Include the following:
 - 1. Instructions for removal and storage of wall sculpture art materials specified to be removed and reinstalled
 - 2. Details of labeling and storage of art sculpture materials.
 - 3. Details for reinstallation of art sculpture materials.

1.03 QUALITY ASSURANCE

- A. Art Installation Specialist Qualifications: Company specializing in art removal, installation and storage work, with at least three years of documented experience in comparable projects, and employing personnel skilled in the procedures and operations required by project scope of work.

1.04 STORAGE AND HANDLING

- A. Storage and Protection:
 - 1. Label specific pieces or items to be removed. Label consistently and inconspicuously indicating original location, and document original position.
 - 2. Protect materials during storage and construction from adverse conditions, including, but not limited to, rain, snow, or groundwater, and from soiling with earth or any other materials.

PART 2 PRODUCTS

2.01 PRODUCTS

- A. Cleaning/Finish Product: Pledge Floor Gloss.

PART 3 EXECUTION

3.01 GENERAL PROCEDURES

- A. Employ a Art Installation Specialist to provide wall art sculpture examination, removal and reinstallation.
- B. Document precise layout of wall art sculpture and anchor points prior to removal. Use photos, scans, videos or other applicable procedures. Provide documentation to Owner and Architect.
- C. Prior to removal, determine the proper procedures for removal of existing wall art sculpture.

3.02 REMOVAL

- A. Remove sculpture pieces without damaging sculpture.
- B. Label each piece of sculpture with designations indicated on shop drawings.
- C. Store pieces in secure storage containers labled with contents.
- D. Store containers in secure location approved by Owner.

3.03 CLEANING

- A. Clean sculpture prior to reinstallation.
- B. Wipe off each piece with a mild cleaning solution (diluted dish soap). Wipe twice, once with soap solution and once with warm water. Do not soak.
- C. Let dry completely.
- D. Coat with a thin coat of spray applied Pledge Floor Gloss and let dry before reinstallation.

3.04 REINSTALLATION

- A. Layout new location of art wall sculpture using layout drawings assembled from original installation.
- B. Reinstall art sculpture in new location using methods determined by Art Installation Specialist.

END OF SECTION

**SECTION 02 41 00
DEMOLITION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building demolition excluding removal of hazardous materials and toxic substances.
- B. Selective demolition of building elements for alteration purposes.

1.02 REFERENCE STANDARDS

- A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.

1.03 SUBMITTALS

- A. 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.
 - 2. Identify demolition firm and submit qualifications.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. 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.
 - 3. Provide, erect, and maintain temporary barriers and security devices.
 - 4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 5. Do not close or obstruct roadways or sidewalks without permit.
 - 6. 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.
 - 7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Protect existing structures and other elements that are not to be removed.
 - 1. Provide bracing and shoring.
 - 2. Prevent movement or settlement of adjacent structures.
 - 3. Stop work immediately if adjacent structures appear to be in danger.
- D. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

3.02 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; 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 disconnected and abandoned utilities.

3.03 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation only.
 - 1. Verify that 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. Remove existing work as indicated and as required to accomplish new work.
 - 1. Remove items indicated on drawings.
- C. Services (Including but not limited to Telecommunications, Telecommunications, Telecommunications, and Telecommunications): Remove existing systems and equipment as indicated.
 - 1. Maintain existing active systems that are to remain in operation; 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. Verify that abandoned services serve only abandoned facilities before removal.
 - 4. 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.
- D. Protect existing work to remain.
 - 1. Prevent movement of structure; provide shoring and bracing if necessary.
 - 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 - 3. Repair adjacent construction and finishes damaged during removal work.
 - 4. Patch as specified for patching new work.

3.04 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

**SECTION 03 30 00
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Requirements:
 - 1. Section 31 20 00 "Earth Moving" for drainage fill under slabs-on-grade.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.
- D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.
- E. Construction Joint Layout: Indicate proposed construction joints required to construct the slab.
 - 1. Location of construction joints is subject to the approval of the Architect.

1.03 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Material certificates.
- C. Material test reports.
- D. Floor surface flatness and levelness measurements.
- E. Minutes of pre-installation conference(s).

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M, "Structural Welding Code - Reinforcing Steel."
- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- F. Preinstallation Conference: Conduct conference at Project site or by telephone. Conference to include Architect, Structural Engineer, Contractor and / or Subcontractor.
- G. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregates from a single source and obtain admixtures through a single source from a single manufacturer.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.02 STEEL REINFORCEMENT

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

1. Epoxy-Coated Reinforcing Bars: ASTM A 775/A 775M, epoxy coated, with less than 2 percent damaged coating in each 12-inch (300-mm) bar length.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- D. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.
- E. Galvanized-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from galvanized-steel wire into flat sheets.
- F. Epoxy-Coated Welded Wire Reinforcement: ASTM A 884/A 884M, Class A coated, Type 1, plain steel.
- G. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice. Where bar supports are located in slabs where the surface is exposed, bar supports shall be non-corrosive.
- H. Re-entrant corners at slab on grade shall be reinforced with a #4 bar x 2'-6" long, placed at mid-depth of slab.

2.03 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 1. Portland Cement: ASTM C 150, Type I, gray. Supplement with the following with the approval of the Engineer:
 - a. Fly Ash: ASTM C 618, Class C or F. Maximum of 20% replacement of cement by mass.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
 1. Maximum Coarse-Aggregate Size: 1-1/4 inches for interior slabs on grade, 1 inch for foundations and exterior slabs on grade.
 2. Provide aggregates from a single source with documented service record data of at least 10 years' satisfactory service in similar applications and service conditions using similar aggregates and cementitious materials.
 3. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
 - a. Where slabs are to be exposed in the final condition, the fine aggregate shall be free of material prone to pop outs or rust stains. Import aggregates if local aggregates cannot achieve this requirement.
- C. Water: ASTM C 94/C 94M and potable.

2.04 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will 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 C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
- C. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.05 WATERSTOPS

- A. Flexible Rubber Waterstops: CE CRD-C 513, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
- B. Chemically Resistant Flexible Waterstops: Thermoplastic elastomer rubber waterstops with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints; resistant to oils, solvents, and chemicals. Factory fabricate corners, intersections, and directional changes.

- C. Flexible PVC Waterstops: CE CRD-C 572, with factory-installed metal eyelets, for embedding in concrete to prevent passage of fluids through joints. Factory fabricate corners, intersections, and directional changes.
- D. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch (19 by 25 mm).
- E. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch (10 by 19 mm).

2.06 VAPOR RETARDERS

- A. Sheet Vapor Retarder: ASTM E 1745, Class A, not less than 10 mils. Include manufacturer's recommended adhesive or pressure-sensitive tape.

2.07 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. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, non-dissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- G. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
 - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
 - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.08 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.

2.09 CONCRETE MIXTURES

- 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, according to ACI 301.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not more than 20 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability. All anticipated admixtures must be clearly identified in any mix design submitted for approval.
 - 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, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
- D. Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength:
 - a. 4000 psi at 28 days for all uses.
 - 2. Typical Maximum Water-Cementitious Materials Ratio: 0.50

3. Slump Limit: 8 inches (200 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch (25-mm) nominal maximum aggregate size.
5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

2.10 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.11 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Chamfer exterior corners and edges of permanently exposed concrete.

3.02 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. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 1. All post installed anchors used for anchor rods supporting steel columns, as indicated, are required to be tested by the Owner's testing agency.
 2. Wet-setting of anchor rods and/or reinforcement is not allowed.

3.03 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions.
 1. Lap joints 6 inches (150 mm) and seal with manufacturer's recommended tape.

3.04 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.05 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect. All joints in exposed slabs must be approved by the Architect and Engineer.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows. Type of joint must be approved by the Architect and Engineer.
 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

- D. Isolation Joints in Slabs-on-Grade: 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.
- E. Maximum spacing of contraction joints:
 - 1. Slab on Grade: 30 times the thickness of the slab or as indicated.
 - 2. Exposed basement walls: 30 feet
 - 3. Exposed non-basement walls or exposed curbs: 12 feet
- F. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

3.06 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.
- D. Hot-Weather Placement: Comply with ACI 301.
- E. Do not add water to concrete during delivery, at Project site or during placement unless explicitly required and documented by ready-mix supplier.

3.07 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces exposed to public view, or as indicated on Architectural drawings.
- C. Rubbed Finish: Apply the following to smooth-formed finished as-cast concrete where indicated:
 - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
 - 2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
 - 3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.08 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch (6 mm) in one direction.
 - 1. Apply scratch finish to surfaces indicated.
- C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces indicated or to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.
- D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces indicated, 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.
 - 2. Finish to the following tolerances, according to ASTM E 1155:
 - a. Specified overall values of flatness F_F 35 and of levelness F_L 17; with minimum local values of flatness F_F 24 and of levelness F_L 17.
 - 3. Floors shall be tested for flatness per ASTM E1155 within 48 hours of placement by the Owner's testing agency.
- E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated and where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
 - 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and elsewhere as indicated.

3.09 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for 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 (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
 - a. 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 will not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
 - D. Protect slab that is to be exposed from damage by equipment, tape, fluids, oils, storage of materials, and construction materials.
 1. All equipment must be equipped with non-marking tires.
- 3.10 CONCRETE SURFACE REPAIRS**
- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
 1. Defective concrete shall be repaired, removed or patched at no additional cost to the Owner.
- 3.11 FIELD QUALITY CONTROL**
- A. Testing and Inspecting: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. UNO, tests shall include the following for every 100 CY and fractions thereof of concrete placed:
 1. Slump, Air Content, Temperature (concrete and air), air entrainment and 1 set of 3 test cylinders. Break 1 cylinder at 7 days, 1 cylinder at 28 days and hold 1 cylinder in reserve.
 2. The cost to perform additional tests due to defective concrete or deficient test results shall be paid by the Contractor. The cost to repair, remove or patch defective concrete shall be paid by the Contractor.

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SECTION 04 20 00
UNIT MASONRY ASSEMBLIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Concrete masonry units (CMUs).
- C. Mortar and grout.
- D. Reinforcing steel.
- E. Masonry joint reinforcement.
- F. Ties and anchors.
- G. Miscellaneous masonry accessories.

1.02 RELATED REQUIREMENTS

- A. Section 04 20 01 – Masonry Veneer: Brick and accessories.
- B. Section 05 50 00 – Metal Fabrications: Loose steel lintels.
- C. Section 07 25 00 – Weather Barriers: Through wall flashings.
- D. Section 07 92 00 – Joint Sealants: Sealing control and expansion joints.

1.03 DEFINITIONS

- A. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths (f'_m) at 28 days.
- B. Determine net-area compressive strength (f'_m) of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to Tables 1 and 2 in ACI 530.1/ASCE 6/TMS 602.

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Show sizes, profiles, of special shapes.

1.06 INFORMATIONAL SUBMITTALS

- A. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
 - 1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
 - 2. Cementitious materials. Include brand, type, and name of manufacturer.
 - 3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 - 4. Grout mixes. Include description of type and proportions of ingredients.
- B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
 - 1. Include test reports, per ASTM C 780, for mortar mixes required to comply with property specification.
 - 2. Include test reports, per ASTM C 1019, for grout mixes required to comply with compressive strength requirement.
- C. Cold-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with cold-weather requirements.

1.07 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1093 for testing indicated, as documented according to ASTM E 548.
- B. 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, through one source from a single manufacturer for each product required.
- C. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from a single manufacturer for each cementitious component and from one source or producer for each aggregate.
- D. Masonry Contractors Qualifications: The Masonry company may be required to provide recorded experience with a minimum record of five (5) years in service at the time of bidding.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. 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.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained, and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.09 PROJECT CONDITIONS

- A. 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 and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.
- C. 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 sills, ledges, and projections from mortar droppings.
 - 2. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 3. 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.
- D. 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
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 2. Products: Subject to compliance with requirements, provide one of the products specified.
 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
 4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.02 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.03 CONCRETE MASONRY UNITS (CMUs)

- A. Shapes: Provide shapes indicated and as follows:
1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 2. Provide bullnose units for outside corners, unless otherwise indicated. Do not provide bullnose units at door frames.
- B. Concrete Masonry Units: ASTM C 90
1. Unit Compressive Strength: Provide units with minimum average net-area minimum compressive strength of 1900 psi.
 2. Weight Classification: Normal weight.
 3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
 4. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
 5. Grade: For above grade interior units, use Grade N, Type I, complying to ASTM C-90 for load bearing concrete masonry. For below grade units, use Grade M, Type I.

2.04 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Masonry Cement: Shall comply with ASTM C-91 for Type N or M masonry.
- C. Hydrated Lime: ASTM C 207, Type S.
- D. Portland Cement-Lime Mix: Packaged blend of portland cement complying with ASTM C 150, Type I or Type III, and hydrated lime complying with ASTM C 207, Type S.
- E. 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. Colored-Mortar Aggregates: Natural sand
- F. Aggregate for Grout: ASTM C 404.
- G. Water: Potable.

- H. Mortar for Exterior Block: When exterior concrete masonry is to be used a water repellent mortar will be used which is of the same manufacturer as that of the masonry block water repellent admixture. Color shall match the block color, unless otherwise noted.

2.05 REINFORCEMENT

- A. Masonry Joint Reinforcement, General: ASTM A 951.
1. Interior Walls: Hot-dip galvanized, carbon steel.
 2. Exterior Walls: Hot-dip galvanized, steel.
 3. Wire Size for Side Rods: W1.7.
 4. Wire Size for Cross Rods: W1.7.
 5. Wire Size for Veneer Ties: W1.7.
 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 7. Provide in lengths of not less than 10 feet .
 8. At corners, use 16 gauge, hot dipped wire push ties, 16" from corner.

2.06 TIES AND ANCHORS

- A. Materials: Provide ties and anchors as specified:
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153, Class B-2 coating.
 2. Stainless-Steel Wire: ASTM A 580, Type 304.
 3. Adjustable eye wires for attachment of brick to CMU backup:
 - a. Product: Hohmann & Barnard, Inc. 170 Adjustable Truss Eye-Wire, or approved equivalent.

2.07 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. Limit cementitious materials in mortar to portland cement and lime.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270 Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
1. For masonry below grade or in contact with earth, use Type S.
 2. For reinforced masonry, use Type S.
 3. For exterior, above-grade, load-bearing and non-load-bearing walls and parapet walls; for interior load-bearing walls; for interior non-load-bearing partitions; and for other applications where another type is not indicated, use Type S.
 4. For interior non-load-bearing partitions Type N.
- D. Grout for Unit Masonry: Comply with ASTM C 476
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with Table 1.15.1 in ACI 530.1/ASCE 6/TMS 602 for dimensions of grout spaces and pour height.
 2. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C 143.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
1. Verify that foundations are within tolerances specified.
 2. Verify that reinforcing dowels are properly placed.

- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 - 1. Mix units from several pallets or cubes as they are placed.
- F. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.03 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Stopping and Resuming Work: Stop work by raking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- C. Built-in Work: As construction progresses, build in items specified in this and other Sections shall be installed by Trades furnishing materials. Fill in solidly with masonry around built-in items.
- D. Fill space between steel frames and masonry solidly with mortar, unless otherwise indicated.
- E. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below and rod mortar or grout into core.
- F. Fill cores in hollow concrete masonry units with grout 24 inches under bearing plates, beams, lintels, posts, and similar items, unless otherwise indicated.
- G. Build non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above, unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Wedge non-load-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
 - 3. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 7 Section "Fire-Resistive Joint Systems." To be installed by trade providing material.
- H. Bond breakers: Locate where masonry wall meets concrete floor or roof construction. Note where fire separation is required.

3.04 MORTAR BEDDING AND JOINTING

- A. Lay hollow brick and concrete masonry units as follows:
 - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

3.05 LINTELS

- A. Install steel lintels where indicated.
- B. Provide masonry lintels where shown and where openings of more than 12 inches 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.
- D. Inset leg of steel lintel to allow for tool joint at bearing location.

3.06 REINFORCED UNIT MASONRY INSTALLATION

- A. 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 other temporary loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in ACI 530.1/ASCE 6/TMS 602.
- C. 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 ACI 530.1/ASCE 6/TMS 602 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.

3.07 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.

END OF SECTION 04 20 00

**SECTION 05 12 00
STRUCTURAL STEEL FRAMING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural steel.
- B. Grout

1.02 RELATED REQUIREMENTS

- A. Section 09 91 13 – Exterior Painting: For preparation and application of zinc-rich coating to exterior steel.

1.03 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.04 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site

1.05 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: Show fabrication of structural-steel components.
- C. Delegated-Design Submittal: For structural steel connections indicated to comply with design loads. Include analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.06 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and fabricator.
- B. Welding certificates.
- C. Mill test reports for structural steel, including chemical and physical properties.
- D. Source quality-control reports.
- E. Field quality-control and special inspection 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 STD.
- B. Installer Qualifications: A qualified installer with a minimum of 5 years of similar experience.
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code - Steel."
- D. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC 303.
 - 2. AISC 360.
 - 3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator, including comprehensive engineering analysis by a qualified professional engineer, to withstand loads indicated and comply with other information and restrictions indicated.
 - 1. Select and complete connections using schematic details indicated and AISC 360.
 - 2. Use Allowable Stress Design; data are given at service-load level.
- B. Moment Connections: Type FR, fully restrained, UNO.
- C. Construction: Combined system of moment frame, braced frame, and shear walls.

2.02 STRUCTURAL-STEEL MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. W-Shapes: ASTM A 992.
- C. Channels, Angles, M, S-Shapes: ASTM A 36.
- D. Plate and Bar: ASTM A 36, UNO.
- E. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
- F. Steel Pipe: ASTM A 53, Type E or Type S, Grade B.

- G. Welding Electrodes: Comply with AWS requirements.
- 2.03 BOLTS, CONNECTORS, AND ANCHORS**
- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.
 - 1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.
 - B. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers with plain finish.
 - 1. Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type with plain finish.
 - C. Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers.
 - 1. Finish: Hot-dip or mechanically deposited zinc coating.
 - 2. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with mechanically deposited zinc coating, baked epoxy-coated finish.
 - D. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
 - 1. Finish: Plain, UNO.
 - E. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.
 - F. Unheaded Anchor Rods: ASTM F 1554, Grade 36, UNO.
 - 1. Configuration: Straight.
 - 2. Finish: Hot-dip zinc coating, ASTM A 153, Class C.
 - G. Threaded Rods: ASTM A 36, UNO.
 - 1. Finish: Hot-dip zinc coating, ASTM A 153, Class C.
 - H. Clevises and Turnbuckles: Made from cold-finished carbon steel bars, ASTM A 108, Grade 1035.
- 2.04 PRIMER**
- A. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services) "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."
 - B. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.
- 2.05 GROUT**
- A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.
 - B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
- 2.06 FABRICATION**
- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and to AISC 360.
 - B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.
- 2.07 SHOP CONNECTIONS**
- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened, UNO.

- B. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.08 SHOP PRIMING

- A. Shop prime steel surfaces except the following:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Surfaces of high-strength bolted, slip-critical connections.
 - 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
 - 5. Galvanized surfaces.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - 1. SSPC-SP 2, "Hand Tool Cleaning."
 - 2. SSPC-SP 3, "Power Tool Cleaning."
 - 3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.09 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Bolted Connections: Inspect and test shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1 and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E 165.
 - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - 3. Ultrasonic Inspection: ASTM E 164.
 - 4. Radiographic Inspection: ASTM E 94.
- D. 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Baseplates Bearing Plates and Leveling Plates (as required by contractor or shown): 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 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 shrinkage-resistant grouts.

- C. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

3.03 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened, UNO.
- B. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and 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 where indicated, 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 AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," for mill material.

3.04 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified 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.
- C. Bolted Connections: Inspect and test bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: Visually inspect field welds according to AWS D1.1.
 - 1. In addition to visual inspection, test and inspect field welds according to AWS D1.1 and the following inspection procedures, at testing agency's option:
 - a. Liquid Penetrant Inspection: ASTM E 165.
 - b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
 - c. Ultrasonic Inspection: ASTM E 164.
 - d. Radiographic Inspection: ASTM E 94.

END OF SECTION 05 12 00

SECTION 05 31 00 - STEEL DECKING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Roof deck.
 - 2. Composite floor deck.

1.02 ACTION SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.
- 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.

1.03 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Product certificates.
- C. Evaluation reports.
- D. Field quality-control reports.

1.04 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

1.05 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.

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."
- B. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.02 ROOF DECK

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ASC Profiles, Inc.; a Blue Scope Steel company.
 - 2. Canam United States; Canam Group Inc.
 - 3. CMC Joist & Deck.
 - 4. Consolidated Systems, Inc.; Metal Dek Group.
 - 5. Cordeck.
 - 6. DACS, Inc.
 - 7. Epic Metals Corporation.
 - 8. Marlyn Steel Decks, Inc.
 - 9. New Millennium Building Systems, LLC.
 - 10. Nucor Corp.; Vulcraft Group.

11. Roof Deck, Inc.
12. Valley Joist; Subsidiary of EBSCO Industries, Inc.
13. Verco Manufacturing Co.
14. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

- B. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade 33 minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: Manufacturer's standard.
 2. Galvanized-Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.
 3. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.
 - a. Color: Manufacturer's standard.
 4. Deck Profile: As indicated.
 5. Profile Depth: As indicated.
 6. Design Uncoated-Steel Thickness: As indicated.

2.03 COMPOSITE FLOOR DECK

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. ASC Profiles, Inc.; a Blue Scope Steel company.
 2. Canam United States; Canam Group Inc.
 3. CMC Joist & Deck.
 4. Consolidated Systems, Inc.; Metal Dek Group.
 5. Cordeck.
 6. DACS, Inc.
 7. Epic Metals Corporation.
 8. Marlyn Steel Decks, Inc.
 9. New Millennium Building Systems, LLC.
 10. Nucor Corp.; Vulcraft Group.
 11. Roof Deck, Inc.
 12. Verco Manufacturing Co.
 13. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.
- B. 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 A 653/A 653M, Structural Steel (SS), Grade 33 min., G60 zinc coating (G90 at exterior conditions).
 2. Profile Depth: As indicated.
 3. Design Uncoated-Steel Thickness: As indicated.

2.04 ACCESSORIES

- A. General: 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. 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.
- G. Galvanizing Repair Paint: ASTM A 780.
- H. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.01 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. 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.
- C. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- D. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- E. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- F. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- G. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.
- H. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and weld flanges to top of deck. Space welds not more than 12 inches apart with at least one weld at each corner.
 - 1. Install reinforcing channels or zees in ribs to span between supports and weld.
- I. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld to substrate to provide a complete deck installation.
 - 1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.
- J. Pour Stops and Girder Fillers: Weld steel-sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.
- K. 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.

3.02 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. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.03 PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.

END OF SECTION

**SECTION 05 50 00
METAL FABRICATIONS**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Shop fabricated metal items.
 - 2. Metal Stairs.
- B. Related Sections:
 - 1. Section 05 12 00 - Structural Steel Framing: Structural steel column anchor bolts.
 - 2. Section 05 21 00 - Steel Joist Framing: Structural joist bearing plates, including anchorage.
 - 3. Section 05 51 00 – Metal Stairs.
 - 4. Section 09 90 00 - Painting and Coating: Field applied paint finish
 - 5. Section 03 30 00 - Cast-In-Place Concrete: Execution requirements for embedded anchors and attachment for metal fabrications specified in this section in concrete.
 - 6. Section 04 20 00 - Unit Masonry: Execution requirements for embedded anchors and attachments for metal fabrications specified in this section in masonry.

1.02 REFERENCES

- A. Aluminum Association:
 - 1. AA DAF-45 - Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association:
 - 1. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
 - 2. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - 3. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
 - 4. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- C. ASTM International:
 - 1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
 - 2. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - 3. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 4. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 5. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - 6. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes.
 - 7. ASTM A297/A297M - Standard Specification for Steel Castings, Iron-Chromium and Iron-Chromium-Nickel, Heat Resistant, for General Application.
 - 8. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.

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9. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 10. ASTM A312/A312M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes.
 11. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
 12. ASTM A354 - Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners.
 13. ASTM A479/A479M - Standard Specification for Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels.
 14. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
 15. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
 16. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing.
 17. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts.
 18. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
 19. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings.
 20. ASTM B85 - Standard Specification for Aluminum-Alloy Die Castings.
 21. ASTM B177 - Standard Guide for Chromium Electroplating on Steel for Engineering Use.
 22. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 23. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
 24. ASTM B210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.
 25. ASTM B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes (Metric).
 26. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 27. ASTM B211M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wires, Profiles, and Tubes (Metric).
 28. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire.
 29. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Bar, Rod, and Wire (Metric).
 30. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
 31. ASTM F436 - Standard Specification for Hardened Steel Washers.
 32. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
- D. American Welding Society:
1. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.
 2. AWS D1.1 - Structural Welding Code - Steel.

- 3. AWS D1.6 - Structural Welding Code - Stainless Steel.
- E. Green Seal:
 - 1. GC-03 - Anti-Corrosive Paints.
- F. National Ornamental & Miscellaneous Metals Association:
 - 1. NOMMA Guideline 1 - Joint Finishes.
- G. SSPC: The Society for Protective Coatings:
 - 1. SSPC - Steel Structures Painting Manual.
 - 2. SSPC SP 1 - Solvent Cleaning.
 - 3. SSPC SP 10 - Near-White Blast Cleaning.
 - 4. SSPC Paint 15 - Steel Joist Shop Paint.
 - 5. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).

1.03 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittals procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
 - 2. Indicate welded connections using standard AWS A2.0 welding symbols. Indicate net weld lengths.
 - 3. Include erection drawings, elevations, and details where applicable.
- C. Welders Certificates: Certify welders employed on Work, verifying AWS qualification within previous 12 months.
- D. Delegated-Design Submittal: For stairs and railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Accept metal fabrications on site in labeled shipments. Inspect for damage.
- C. Protect metal fabrications from damage by exposure to weather.

1.05 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on shop drawings.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Structural W-Shapes: ASTM A992/A992M;
- B. Steel Plate: ASTM A36/A36M.
- C. Hollow Structural Sections: ASTM A500, Grade B.
- D. Steel Pipe: ASTM A53/A53M, Grade B Schedule 40.
- E. Anchor Rods: ASTM F1554; Grade 36, weldable. Grade A.
 - 1. Finish: Unfinished.
- F. Bolts: ASTM A325; Type 1.
 - 1. Finish: Unfinished.
- G. Nuts: ASTM A563 heavy hex type.
 - 1. Finish: Unfinished.

- H. Washers: ASTM F436; Type 1.
 - 1. Finish: Unfinished.
- I. Welding Materials: AWS D1.1; type required for materials being welded.
- J. Shop Primer: SSPC Paint 15, Type 1, red or gray oxide.
- K. Touch-Up Primer: Match shop primer.

2.02 FABRICATION

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.

2.03 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 in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches

2.04 PERFORMANCE REQUIREMENTS – METAL STAIRS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design stairs and railings.
- B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Uniform Live Load: 100 lbf/sq. ft.
 - 2. Concentrated Live Load: 300 lbf applied on an area of 4 sq. in.
 - 3. Uniform and concentrated live loads need not be assumed to act concurrently.
 - 4. Stair framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
 - 5. Limit deflection of treads, platforms, and framing members to $L/600$ or $1/2"$ for live load, whichever is less, and $L/360$ for total load.

2.05 METAL STAIRS

- A. NAAMM Stair Standard: Comply with "Recommended Voluntary Minimum Standards for Fixed Metal Stairs" in NAAMM AMP 510, "Metal Stairs Manual," Commercial Class, unless more stringent requirements are indicated.
- B. Stair Framing:
 - 1. Fabricate stringers of steel channels or steel plates.
 - a. Provide closures for exposed ends of channel stringers.
 - 2. Construct platforms of steel plate or channel headers and miscellaneous framing members as needed to comply with performance requirements indicated.
 - 3. Weld or bolt stringers to headers; weld or bolt framing members to stringers or headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.
- C. Treads and Risers: As indicated in architectural drawings.
- D. Landings: Same construction as treads, unless noted otherwise; supported and reinforced as required to achieve design loading capacity.
- F. Railings: As indicated in architectural drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify field conditions are acceptable and are ready to receive Work.

3.02 PREPARATION

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates to appropriate sections.

3.03 INSTALLATION

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Make provisions for erection stresses. Install temporary bracing to maintain alignment, until permanent bracing and attachments are installed.
- C. Field weld components indicated on shop drawings.
- D. Perform field welding in accordance with AWS D1.1.
- E. Obtain approval of Architect/Engineer prior to site cutting or making adjustments not scheduled.
- F. After erection, touch up welds, abrasions, and damaged finishes with prime paint or galvanizing repair paint to match shop finishes.

3.04 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

3.05 SCHEDULE

- A. The Schedule is a list of principal items only. Refer to Drawing details for items not specifically scheduled.
- B. Brackets for Wall Mounted Vanities and Counters: Steel bracket assemblies as indicated; through-bolt anchors with oversized washers; drill for attachment to wood. Prime paint finish.
- C. Ladders: Steel, full welded assemblies with curved returns at top; hold rungs not less than 7 inches from wall or obstruction; equip with steel mounting brackets near top and bottom, and not over 6 feet apart. Prime paint. Galvanized finish where exterior.
- D. Ships Ladder: Steel channel stringers, with safety tread equivalent to Wooster Type 117, and landings of Wooster Type 100, and angle supports. Fabricate stair assembly to support a live load of 100 lb/sq ft or a concentrated load of 300 lb. Equip with steel mounting brackets near the top and bottom, and not over 6 feet apart.
- E. Rails and Posts: Steel pipe, 1-1/4 inch nominal diameter; with welded joints. Attach to ships ladder stringer with welded joints. The rail is to be designed for a lateral load of 200 lbs at any point without any damage or permanent set.
- F. Bollards and Pipe Guard Posts: Steel pipe, concrete filled, crowned cap, diameter and length as indicated on Drawings; galvanized.
 - 1. Concrete Fill: 3,000 psi as specified in Section 03 30 00.
 - 2. Anchors: Concealed type as indicated on Drawings.
- G. Lintels, Keywall Angles, Clips and Supports: Install loose steel lintels over openings.
 - 1. As detailed; galvanized finish.
 - 2. Complete with anchor devices, fitted for adjustment, and assembled.

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3. Lintels, for all openings not otherwise indicated. Minimum lintels for each 4 inches of masonry width shall be:
 - a. See structural drawings.
- H. Threshold Angles: 2 x 2 x 1/4 inch angle, as indicated, full width of opening; hooked type anchors for embedment.
- I. Wall, Curb, and Edge-Of-Slab Corner Guards: Hot rolled shapes indicated, with anchors for embedment in masonry or concrete as indicated; prime paint finish.
- J. Frames Fabricated from Structural Shapes and Shaped Plates: For openings in walls and roof: Equip with anchors, adjustable where indicated; close and full-weld corners and splice; provide temporary spreaders for shipment and erection; prime paint finish.
- K. Equipment Support Frames – Support, compressors, and similar items on roofs: Structural shapes indicated; equip with anchors, and drill for anchorage of equipment; galvanized finish.
- L. Equipment Support Frames - Support for freezer cooler condensing units, and similar items: L3x3x1/4 steel angles, with 6-9/16-inch diameter holes; equip with anchors, and drill for anchorage of equipment; prime painted finish.
- M. Cast Aluminum Safety Tread Nosings, for treads, platforms, and landings of all exterior concrete stairs: Equivalent to Wooster Alumogrit, Type 101, 3 inches wide, standard pattern and anchors; length: same as tread less 3 inches at each end.
- N. Metal Stairs: Performance requirements and materials as indicated in preceding sections. Refer to drawings for additional information.

END OF SECTION

**SECTION 05 51 00
ALTERNATING TREAD STAIRS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prefabricated stairs.

1.02 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.
- C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2021.
- D. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).
- E. SSPC-SP 2 - Hand Tool Cleaning 2018.

1.03 SUBMITTALS

- A. Product Data: Provide manufacturer's product data for alternating tread stair.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
 - 1. Include the design engineer's seal and signature on each sheet of shop drawings.

1.04 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

PART 2 PRODUCTS

2.01 METAL STAIRS - GENERAL

- A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
 - 1. Regulatory Requirements: Provide stairs and railings complying with the most stringent requirements of local, state, and federal regulations; where requirements of Contract Documents exceed those of regulations, comply with Contract Documents.
 - 2. Structural Design: Provide complete stair and railing assemblies complying with the applicable local code.
 - 3. Dimensions: As indicated on drawings.
 - 4. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
 - 5. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
 - 6. Separate dissimilar metals using paint or permanent tape.
- B. Metal Jointing and Finish Quality Levels:
- C. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.
- D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.02 PREFABRICATED STAIRS

- A. Alternating Tread Stairs: Welded metal unit; factory fabricated to the greatest degree possible.
 - 1. Design Requirements:
 - a. Stair Load Capacity: Support the following without exceeding the allowable working stress of the material.

- 1) Single Point Load: 1000 pounds.
- 2) Distributed Load: 100 pounds per square foot.
- b. Guardrail and Handrail Capacity: Support the following without exceeding the allowable working stress of the material.
 - 1) Single Point Load: 200 pounds.
 - 2) Distributed Load: 50 pounds per linear foot.
- c. Support the following without exceeding the allowable working stress of the material.
 - 1) Single Point Load: 1000 pounds.
 - 2) Distributed Load: 100 pounds per square foot.
2. Materials: Aluminum; ASTM B221 (ASTM B221M) 6063 alloy T52 temper.
 - a. Stair Angle: 68 degrees,
 - b. Components: Manufacturer's standard handrails, guardrails, non-skid treads and stringers.
 - c. Finish: Mill finish aluminum.
 - d. Safety Gate: Provide manufacturer's safety gate complete with mounting brackets, hinge plates, springs, gate arms and all fasteners and hardware.
 - e. Accessories: Manufacturer's standard foot divider with rubber bumper strip.
3. Manufacturers:
 - a. Lapeyre Stair, Inc; Alternating Tread Stair: www.lapeyrestair.com.
 - b. Precision Ladders, LLC; Aluminum Alternating Tread Stairs: www.precisionladders.com.

2.03 MATERIALS

- A. Steel Sections: ASTM A 36/A 36M.
- B. Concrete Reinforcement: Mesh type as detailed, galvanized.

2.04 SHOP FINISHING

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Do not prime surfaces in direct contact with concrete or where field welding is required.
- C. Prime Painting: Use specified shop- and touch-up primer.
 1. Preparation of Steel: In accordance with SSPC-SP 2 Hand Tool Cleaning.
 2. Number of Coats: One.

2.05 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
 1. Join components by welding unless otherwise indicated.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without impairing work.
- D. Weld connections to comply with the following:
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.

2.06 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal stairs after assembly.

- C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning.
- D. Apply shop primer to uncoated surfaces of metal stair components. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install components plumb and level, accurately fitted, free from distortion or defects.
- B. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.
- D. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.
- E. Obtain approval prior to site cutting or creating adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

END OF SECTION

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SECTION 05 70 00
DECORATIVE METAL AND GLASS RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Railing and guardrail assemblies.
- B. Wall-mounted handrails.

1.02 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2022.
- D. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes 2017.
- E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2021.
- F. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2021.
- G. ASTM A554 - Standard Specification for Welded Stainless Steel Mechanical Tubing 2021.
- H. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2023.
- I. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass 2019.
- J. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings 2021.
- K. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020, with Errata (2022).

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including description of materials, components, finishes, fabrication details, glass, anchors, and accessories.
- B. Shop Drawings: Indicate railing system elevations and sections, details of profile, dimensions, sizes, connection attachments, anchorage, size and type of fasteners, and accessories. Indicate anchor and joint locations, transitions, and terminations.
- C. Test Reports: Submit test reports from an independent testing agency showing compliance with specified design and performance requirements.

1.04 QUALITY ASSURANCE

- A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of work of this section and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

1.05 MOCK-UPS

- A. Provide mock-up of each type of railing system, 5' long, illustrating each type of material, and finish.
- B. Locate where directed by Architect.
- C. Approved mock-up may remain as part of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in factory-provided protective coverings and packaging.
- B. Protect materials against damage during transit, delivery, storage, and installation at site.

- C. Inspect materials upon delivery for damage. Repair damage to be indistinguishable from undamaged areas; if damage cannot be repaired to be indistinguishable from undamaged parts and finishes, replace damaged items.
- D. Prior to installation, store materials and components under cover in a dry location.

PART 2 PRODUCTS

2.01 RAILING SYSTEMS, GENERAL

- A. Railing Systems - General: Factory- or shop-fabricated in design indicated, to suit specific project conditions, and for proper connection to building structure, and in largest practical sizes for delivery to site.
 - 1. Performance Requirements: Design and fabricate railings and anchorages to resist the following loads without failure, damage, or permanent set; loads do not need to be applied simultaneously.
 - a. Lateral Force: 75 lb minimum, at any point, when tested in accordance with ASTM E935.
 - b. Distributed Load: 50 lb/ft minimum, applied in any direction at the top of the handrail, when tested in accordance with ASTM E935.
 - c. Concentrated Loads on Intermediate Rails: 50 psf, minimum.
 - d. Concentrated Load: 200 lbs minimum, applied in any direction at any point along the handrail system, when tested in accordance with ASTM E935.
 - 2. Assembly: Join lengths, seal open ends, and conceal exposed mounting bolts and nuts using slip-on non-weld mechanical fittings, flanges, escutcheons, and wall brackets.
 - 3. Joints: Tightly fitted and secured, machined smooth with hairline seams.
 - 4. Field Connections: Provide sleeves to accommodate site assembly and installation.
 - 5. Welded Joints: Make visible joints butt tight, flush, and hairline; use methods that avoid discoloration and damage of finish; grind smooth, polish, and restore to required finish.
 - a. Ease exposed edges to a small uniform radius.
 - b. Welded Joints:
 - 1) Carbon Steel: Perform welding in accordance with AWS D1.1/D1.1M.

2.02 RAILING SYSTEMS

- A. Interior Structural Glass Railing System, Base-Mounted: Engineered, base-shoe supported railing system with structural glass.
 - 1. Configuration: As indicated on drawings.
 - 2. Top Rail: Brushed stainless steel U channel.
 - 3. Hand Rail: Round, stainless steel, 1-1/2 inch diameter.
 - 4. Base Shoe: Aluminum 6005-T5 alloy, clear anodized satin, dry glazed mounting system. Provide brushed stainless steel cladding.
 - a. Basis-of-Design: CRL L56S Series 2-7/8" x 4-3/4".
 - 5. Glass: As specified in Section 08 80 00 - Glazing.
 - 6. Handrail Brackets: Glass mounted, stainless steel.
 - a. Basis-of-Design: CR Laurence Malibu Series Glass Mounted Handrail Brackets
 - 7. Accessories: Provide all fasteners, gaskets, wedges, shims, spacers, etc. as required for complete installation.
 - 8. System to be delegated design provided by railing supplier, engineered and sealed by engineer responsible for design.
- B. Top Hung Railing System: Glazed, top mounted system comprised of base shoe with through-bolts for 11/16 inch laminated glass.
 - 1. System to be delegated design provided by railing supplier, engineered and sealed by engineer responsible for design.

2.03 MATERIALS

- A. Steel Components:
 - 1. Sections, Shapes, Plate and Bar: ASTM A36/A36M.

2. Tubing: ASTM A501/A501M structural tubing, round and shapes as indicated.
 3. Pipe: ASTM A53/A53M Grade B Schedule 40, black finish.
- B. Stainless Steel Components:
1. ASTM A666, Type 304.
 2. Stainless Steel Tubing: ASTM A554, Type 304, 16 gauge, 0.0625 inch minimum metal thickness, 1-1/2 inch diameter.
 3. Stainless Steel Bars, Shapes and Moldings: ASTM A276/A276M, Type 304.
 4. Stainless Steel Finish: No. 4 Bright Polished finish.
- C. Glass: Laminated safety glass. Refer to Section 08 80 00 - Glazing.

2.04 ACCESSORIES

- A. Welding Fittings: Factory- or shop-welded from matching pipe or tube; joints and seams ground smooth.
- B. Anchors and Fasteners: Provide anchors and other materials as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
1. For anchorage to concrete, provide inserts to be cast into concrete for bolt anchors.
 2. For anchorage to masonry, provide brackets to be embedded in masonry for bolt anchors.
 3. For anchorage to stud walls, provide backing plates for bolt anchors.
 4. Exposed Fasteners: No exposed bolts or screws.
- C. Carbon Steel Bolts and Nuts: ASTM A307.
- D. Sealant: Silicone; clear.

2.05 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Assemble railings in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Form work true to line and level with accurate angles and surfaces.
- D. Fabricate connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- E. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- F. Connections: Fabricate railings with welded connections or pre-fabricated inserts.
- G. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove flux immediately.
 4. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint.
- H. Form changes in direction by bending.
- I. Bend members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- J. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

- K. Provide inserts, glazing, sealants and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- L. Do not use ferric tools, grinders or sanding media on stainless steel.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Comply with manufacturer's drawings and written instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, and with tight joints, except where necessary for expansion.
- C. Anchor securely to structure.
- D. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
- E. Isolate dissimilar materials with bituminous coating, bushings, grommets, or washers to prevent electrolytic corrosion.

3.02 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

3.03 CLEANING

- A. Remove protective film from exposed metal surfaces.
- B. Metal: Clean exposed metal finishes with potable water and mild detergent, in accordance with manufacturer recommendations; do not use abrasive materials or chemicals, detergents, or other substances that may damage the material or finish.
- C. Glass and Glazing: Clean glazing surfaces; remove excess glazing sealant compounds, dirt, and other substances.

END OF SECTION

**SECTION 06 10 00
ROUGH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Sheathing.
- B. Preservative treated wood materials.
- C. Fire retardant treated wood materials.
- D. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

- A. Section 05 50 00 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.

1.03 REFERENCE STANDARDS

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- B. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2017.
- C. ASTM D2898 - Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing 2010 (Reapproved 2017).
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- E. AWPA U1 - Use Category System: User Specification for Treated Wood 2023.
- F. PS 1 - Structural Plywood 2019.

1.04 SUBMITTALS

- A. Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.
- B. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 DELIVERY, STORAGE, AND 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, or installation.
 - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 2. Grading Agency: Any 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.
- C. Lumber fabricated from old growth timber is not permitted.

1.06 DIMENSION LUMBER

- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.

1.07 CONSTRUCTION PANELS

- A. Plywood Wall Sheathing: Plywood, PS 1, Grade C-D, Exposure I.

- B. Glass Mat Gypsum Wall Sheathing: Glass mat faced gypsum, ASTM C1177/C1177M, 5/8 inch Type X fire resistant.
- C. 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.

1.08 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. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
- B. Glass Mat Faced Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 by 20 threads/inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing with a history of successful service.
 - 1. Manufacturers:
 - a. Arch Wood Protection, Inc: www.wolmanizedwood.com.
 - b. Hoover Treated Wood Products, Inc: www.frtw.com.
 - c. Koppers, Inc: www.koppers.com.
 - 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 all exterior rough carpentry items.
 - c. Do not use treated wood in direct contact with the 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. Treat rough carpentry items as indicated .
 - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

PART 3 EXECUTION

2.01 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

2.02 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. 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.

- D. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
- E. 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.
- F. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- G. Provide the following specific non-structural framing and blocking:

2.03 INSTALLATION OF CONSTRUCTION PANELS

- A. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
 - 1. Wood Structural Panel Sheathing Installation:
 - a. Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.
 - b. Fasten panels as indicated below:
 - 1) Screw to cold-formed metal framing.
 - 2) Space panels 1/8 inch apart at edges and ends.
 - 2. Gypsum Sheathing Installation:
 - a. Comply with GA-253 and with manufacturer's written instructions.
 - 1) Fasten gypsum sheathing to cold-formed metal framing with screws.
 - 2) Install boards with a 3/8 inch gap where non-load bearing construction abuts structural elements.
 - 3) Install boards with a 1/4 inch gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.
- B. 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 all edges and into studs in field of board.
 - 1. At 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 indicated on drawings.

2.04 TOLERANCES

- A. Framing Members: 1/4 inch from true position, maximum.
- B. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

2.05 CLEANING

- A. Waste Disposal:
 - 1. Comply with applicable regulations.
 - 2. Do not burn scraps on project site.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

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**SECTION 06 20 00
FINISH CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finish carpentry items including, but not limited to the following:
 - 1. Trim.
 - 2. Decorative Wood Feature Wall.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- B. NHLA G-101 - Rules for the Measurement and Inspection of Hardwood and Cypress 2019.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

1.04 MOCK-UPS

- A. Construct a 3'x2' full scale mockup of a representative section of a wood signage panel showing wood laminations, fastener system, CNC routed design and applied finish. The mockup must be constructed using materials and techniques that accurately represent those used in the production of the final wood signage panel.
- B. Locate where directed by Architect.
- C. Approved mock-up may remain as part of the Work.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.
- B. Protect from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

- A. Interior Woodwork Items:
 - 1. Moldings and Miscellaneous Trim: All exposed surfaces sanded smooth. Prepare for transparent finish.
 - 2. Decorative Wood Feature Wall: All exposed surfaces sanded smooth. Prepare for transparent finish.
 - a. Each area of feature wall to have CNC routed design as indicated on drawings.

2.02 LUMBER MATERIALS

- A. Hardwood Lumber: White oak species, Quarter sawn, maximum moisture content of 6 percent, FAS grade.
 - 1. Grading: In accordance with NHLA G-101 Grading Rules; www.nhla.org.

2.03 FASTENINGS

- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Fasteners: Of size and type to suit application.
- C. Hanger System: Star Hanger Systems; Green Glide System and 336 Mounting Combination Screw, 5/16" Gap, 1-3/8" Thread.

2.04 ACCESSORIES

- A. Wood Filler: Oil base, tinted to match surface finish color.

2.05 WOOD TREATMENT

- A. 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.
- B. Provide identification on fire retardant treated material.

2.06 FABRICATION

- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.07 SHOP FINISHING INTERIOR FINISH CARPENTRY

- A. Apply wood filler in exposed nail and screw indentations.
- B. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.
- C. Finish work with the following:
 - 1. Basis-of-Design: Bona, Mega One Extra Matte.
 - a. Substitutions: See Section 01 25 00 - Substitution Procedures.
- D. Finish all surfaces exposed to view.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Set and secure materials and components in place, plumb and level.
- B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- C. Fill all fastener locations to match adjacent wood finish.

3.02 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

SECTION 06 41 00
ARCHITECTURAL WOOD CASEWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Specially fabricated cabinets and casework.
- B. Cabinet hardware.
- C. Shop finishing.
- D. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

- A. Section 12 36 00 - Countertops.
- B. Section 13 46 00 - Bullet Resistant Fiberglass: For panels to be built into casework.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI - Architectural Woodwork Standards, 2nd Edition.
- B. BHMA A156.9 - Cabinet Hardware 2020.
- C. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
- B. Product Data: Provide data for hardware accessories.
- C. Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
- D. Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.

1.05 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company that follows AWI/AWMAC/WI "Architectural Woodwork Standards, 2nd Edition.Edition", specializing in fabricating the products specified in this section. Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
 - 1. Fabricator of this section must also provide work specified in Division 6 Section "Wood-Veneer Paneling".
 - 2. Fabricator of this section must also provide work specified in Division 12 Section "Countertops".
- B. Quality Standards: Unless otherwise indicated, comply with AWI/AWMAC/WI "Architectural Woodwork Standards, 2nd Edition".

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect units from moisture damage.

1.07 FIELD CONDITIONS

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.

1.08 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that wood-veneer-faced architectural cabinets can be supported and installed as indicated.

PART 2 PRODUCTS

2.01 CASEWORK

- A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards, 2nd Edition for Grades as indicated.
- B. Plastic Laminate Faced Cabinets: Custom grade.
- C. Wood Veneer Cabinets and Casework:
 - 1. Finish - Exposed Exterior Surfaces: Wood.
 - 2. Finish - Exposed Interior and Concealed Surfaces: Thermoset decorative laminate panels.
 - 3. Finish - Drawer Subfronts, Backs, Sides and Bottoms: Thermoset decorative laminate panels.
 - 4. Provide same finish on both sides of all panels. If different finishes are indicated for each side of finished panels, provide back to back layers.
 - 5. Door and Drawer Front Edge Profiles: Square edge with thick applied band.
 - 6. Casework Construction Type: Manufacturer's option.
 - 7. Interface Style for Cabinet and Door: Style 1 - Overlay; flush overlay.
 - 8. Grain Direction: Vertical on all surfaces, except drawers shall be horizontal, unless otherwise indicated on drawings.
 - 9. Grained Face Layout for Cabinet and Door Fronts: Flush panel.
 - a. Custom Grade: Doors, drawer fronts and false fronts wood grain to run and match vertically within each cabinet unit.
 - 10. Adjustable Shelf Loading: 50 lbs. per sq. ft.
 - a. Shelving shall be 1" thick minimum.
 - b. Provide bored hole shelf rest system with metal shelf rests unless otherwise indicated.
 - 11. Cabinet Style: Flush overlay.
 - 12. Veneer Matching within Panel Face: Center-balance match.
 - 13. Cabinet Doors and Drawer Fronts: Flush style.
 - 14. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
 - a. Join subfronts, backs, and sides with glued dovetail or dowel joints.
 - 15. Provide dust panels of ¼ inch plywood or tempered hardboard above compartments and drawers, unless located directly under tops.
- D. Plastic Laminate Cabinets and Casework:
 - 1. Cabinet Construction: Flush overlay.
 - 2. Laminate Cladding for Exposed Surfaces: High-pressure decorative laminate.
 - 3. Edge Treatment for doors and drawers: PVC edge banding, 3 mm thickness, matching laminate in color, pattern, and finish.
 - 4. Materials for Semiexposed Surfaces Other Than Drawer Bodies: Thermoset decorative panels.
 - 5. Drawer Sides and Backs: Thermoset decorative panels.
 - 6. Drawer Bottoms: Thermoset decorative panels.
 - 7. Colors, Patterns, and Finishes: Refer to Drawings for material finish specification.
 - 8. Adjustable Shelf Loading: 50 lbs. per sq. ft.
 - a. Shelving shall be 1" thick minimum.
 - b. Provide bored hole shelf rest system with metal shelf rests unless otherwise indicated.

9. Core Material: Particleboard or Medium Density Fiberboard. Use exterior grade plywood for core material at sink bases.
10. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
 - a. Join subfronts, backs, and sides with glued dovetail or dowel joints.
11. Provide dust panels of 1/4-inch plywood or tempered hardboard above compartments and drawers, unless located directly under tops.

2.02 WOOD-BASED COMPONENTS

- A. Wood fabricated from old growth timber is not permitted.
- B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
 1. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no added urea formaldehyde.
 2. Particleboard: ANSI A208.1, Grade M-2, moisture resistant, made with binder containing no added urea formaldehyde.
 3. Wood Veneer-Faced Panel Products: HPVA HP-1, with plywood, particleboard or medium density fiberboard cores, made with adhesive containing no urea formaldehyde.
 4. Thermoset Decorative Panels (Melamine): Medium-density fiberboard or particleboard finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for test methods 3.3, 3.4, 3.6, 3.8, and 3.10.
- C. Hardwood Edgebanding: Use solid hardwood edgebanding matching species, color, grain, and grade for exposed portions of cabinetry.

2.03 LAMINATE MATERIALS

- A. Thermally Fused Laminate (TFL): Melamine resin, NEMA LD 3, Type VGL laminate panels.
- B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- C. Provide specific types as indicated.
 1. Horizontal Surfaces: HGS, 0.048 inch nominal thickness, through color.
 2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color.
 3. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.04 COUNTERTOPS

- A. Countertops are specified in Section 12 36 00.

2.05 ACCESSORIES

- A. Adhesive: Type recommended by fabricator to suit application.
- B. Grommets: Standard plastic grommets for cut-outs, with notched cap, in color to match adjacent surface.

2.06 HARDWARE

- A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
- B. Drawer and Door Pulls: Stainless steel back mounted solid metal 5 inches long 1-1/2 inches deep and 5/16 inch in diameter.
- C. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with satin finish.
- D. Drawer Slides:
 1. Type: Full extension.
 2. Static Load Capacity: Heavy Duty grade.
 3. Mounting: Side mounted.
 4. Steel ball bearings.

5. Provide all screws and mounting brackets.
6. Features: Provide soft closing type.
7. Approved Products:
 - a. Accuride International, Inc: www accuride.com.
 - b. Grass America Inc: www.grassusa.com.
 - c. Knap & Vogt Manufacturing Company; Heavy-Duty Drawer Slides: www.knapeandvogt.com.
- E. Hinges: European style concealed self-closing type, 120 degree, steel with satin finish.
 1. Basis-of-Design:
 - a. Grass America Inc[<>] #3903 with Clip Plates: www.grassusa.com.
 - b. Julius Blum, Inc[<>] CLIP top hinges: www.blum.com.
- F. Utility Shelving:
 1. Grade: Custom.
 2. Shelf Material: 3/4 inch plastic laminate faced panel product with matching edge.
 3. Shelf Supports: Knap & Vogt; 87 Standards with 187 brackets.
 - a. Provide one of the following:
 - 1) Knap & Vogt; 87 Standards with 187 Brackets.
 - 2) Granger; 1WDP Standards with 1WDP Brackets.
 - b. Finish: White (powdercoat paint) or Anochrome (electrozinc-plated and clear lacquered cold rolled steel) as selected by the Architect.
 - c. Bracket and Standard Metal Thickness: 12 gauge.
 - d. Size: Provide brackets for shelf depths and spacing as indicated on drawings, if spacing is not indicated, provide the following:
 - 1) Standards: 2 standards for shelves 3 feet or less, 1 additional standard for each additional 3 foot shelf length.
 - 2) Brackets: Provide 1 bracket at every shelf.
- G. Bumper Pads: 1/4" diameter neoprene, adhesively applied to cabinet body at contact points for doors and drawers.

2.07 FABRICATION

- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- C. ADA Casework: Highest point of ADA height countertops (i.e. top of lip on sinks, grommets, etc.) shall fall under the maximum allowed ADA countertop height. Adjust cabinet heights as necessary to allow for this.
- D. Plastic Laminate: 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.
 1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces not exposed to view.
- E. Matching Wood Grain: Comply with requirements of quality standard for specified Grade and as follows:
 1. Provide balance matched panels at each elevation.
- F. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

2.08 SHOP FINISHING

- A. Sand work smooth and set exposed nails and screws.
- B. On items to receive transparent finishes, use wood filler matching or blending with surrounding surfaces and of types recommended for applied finishes.

- C. Finish work in accordance with AWI/AWMAC/WI (AWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. System - 5, Varnish, Conversion.
 - b. Stain and Sheen: Match Architect's sample.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) requirements for grade indicated.
- B. Before installation, condition woodwork to average prevailing humidity conditions in installation areas. Examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.
- C. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- D. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- E. Install woodwork level, plumb, true, and straight to a tolerance of 1/8 inch in 96 inches. Shim as required with concealed shims.
- F. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- G. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork and matching final finish if transparent finish is indicated.
- H. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation.
 - 1. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into wood framing, blocking, or hanging strips.

3.03 ADJUSTING

- A. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

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**SECTION 06 42 00
WOOD PANELING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Custom wood paneling.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Grounds and concealed blocking.

1.03 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition.
- C. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2020.

1.04 SUBMITTALS

- A. Product Data: Provide data on fire retardant treatment materials and application instructions.
- B. 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 plan of panel number sequencing.

1.05 MOCK-UP

- A. Construct mock-up, a minimum of 4 feet long by 2 feet wide, illustrating full panel sheet, edge trim, joint trim, applied finish.
- B. Locate where directed by Architect.
- C. Approved mock-up may remain as part of the Work if size matches finished panel size.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Protect work from moisture damage.
- B. Do not deliver wood materials to project site until building is fully enclosed and interior temperature and humidity are in accordance with recommendations of AWI/AWMAC/WI (AWS), "Architectural Woodwork Standards, 2nd Edition".

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

- A. Comply with applicable codes for fire-retardant requirements.

2.02 PANELING

- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS), "Architectural Woodwork Standards, 2nd Edition", unless otherwise indicated.
- B. Flat Paneling (WD-4):
 - 1. Veneer Basis-of-Design: Koroseal, Arbor Wood Wallcovering.
 - a. Species and Cut: Grade A white oak, quarter sliced
 - b. Veneers: Slip matched
 - c. Panels: Balance match.
 - 1) Each Panel Within Single Area: Sequence matched uniform size sets.
 - d. Reveals: Routed and painted.
 - e. Outside Corners: Provide continuous wrapped edges using wood wallcovering product.

2.03 WOOD-BASED MATERIALS - GENERAL

- A. Wood fabricated from old growth timber is not permitted.

- B. Hardwood Plywood: HPVA HP-1 Grade A; veneer core, type of glue recommended for application of any grain suitable for application of wallcovering.

2.04 ADHESIVES AND FASTENERS

- A. Adhesives: Type suitable for intended purpose, complying with applicable air quality regulations.
- B. Primer: As recommended by wood wallcovering manufacturer.

2.05 FABRICATION

- A. Shop prepare panels for application of wood veneer wallcovering.
- B. Apply primer to panels in accordance with wood wallcovering manufacturer's recommendations.
- C. Install wood wallcovering to primed panels in accordance with wallcovering manufacturer's written instructions.
- D. Wrap corners with continuous wallcovering using manufacturer's recommended methods including, but not limited to, using clean water and a clean lint-free rag to add moisture to allow wood wallcovering to bend around corners without shearing/breaking the veneer face of the wallcovering.
- E. Air bubbles must be removed and installation errors in wood wallcovering installation must be corrected before adhesive dries.
- F. Contact wood wallcovering representative if problems occur.
- G. Prepare panels for delivery to site, permitting passage through building openings.

2.06 ACCESSORIES

- A. Back-Mounting Accessories: Concealed support, designed to allow panel removal, and as follows:
 - 1. Two-part clip and base-support bracket system: Metal gravity clip system designed to support full weight of panels and clips designed for lateral support, with one part mechanically attached to back of panel and the other attached to substrate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated on shop drawings.
- B. Verify adequacy of backing and support framing.
- C. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

- A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Do not begin installation until wood materials have been fully acclimated to interior conditions.
- C. Set and secure materials and components in place, plumb and level, using concealed fasteners wherever possible.
- D. Touch up damaged finish to match original, using materials provided by fabricator; replace components that cannot be refinished like new.

3.03 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

**SECTION 07 01 50.19
PATCHING OF EXISTING ROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Patching of areas of existing roofing.
- B. Temporary roofing protection.

1.02 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.
 - 1. Attendees:
 - a. Architect.
 - b. Contractor.
 - c. Installer.

1.03 SUBMITTALS

- A. Product Data: Submit for each type of material.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

1.05 FIELD CONDITIONS

- A. Contractor shall verify assembly and materials of roof areas requiring patching.
- B. Do not remove existing roofing membrane when weather conditions threaten the integrity of building contents or intended continued occupancy.
- C. Maintain continuous temporary protection prior to and during installation of patching.
- D. Provide notice at least three days before starting activities that will affect normal building operations.
- E. Owner will occupy building areas directly below re-roofing area.
 - 1. Provide Owner with at least 48 hours written notice of roofing activities that may affect their operations and to allow them to prepare for upcoming activities as necessary.
 - 2. Maintain access of Owner's personnel to corridors, existing walkways, and adjacent buildings.

1.06 WARRANTY

- A. Existing Warranties: Perform this work using methods and materials that will maintain existing roof system warranties. Obtain existing warranty information from the Owner.
 - 1. Notify existing roof system warrantor prior to starting this work and obtain written instructions for procedures necessary to maintain this existing warranty.
 - 2. Upon completion of this work, notify warrantor of patching completion and obtain documentation to verify that existing roofing system has been inspected and warranty is still in effect.
 - a. Submit documentation upon project closeout.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Patching Materials: Provide necessary materials in accordance with requirements of existing roofing system.
- B. Temporary Roofing Protection Materials:
 - 1. Contractor's responsibility to select appropriate materials for temporary protection of roofing areas as determined necessary for this work.
- C. Roofing Patching Materials:

1. Contractor's responsibility to select appropriate materials for roofing re-cover as determined necessary for this work.

PART 3 EXECUTION

3.01 MATERIAL REMOVAL

- A. Remove only existing roofing materials that can be replaced with new materials the same day.

3.02 INSTALLATION

- A. Install new patching materials to match existing, adjacent roofing.

3.03 PROTECTION

- A. Provide protection of existing roofing system that is not having work performed on it.
- B. Do not permit traffic over unprotected or repaired deck surface.

END OF SECTION

SECTION 07 05 53
FIRE AND SMOKE ASSEMBLY IDENTIFICATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Identification markings for fire and smoke rated partitions, and fire rated walls.

1.02 RELATED REQUIREMENTS

- A. Section 09 91 23 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

- A. ICC (IBC) - International Building Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's printed product literature for each type of marking, indicating font, foreground and background colors, wording, and overall dimensions.
- B. Schedule: Completely define scope of proposed marking, and indicate location of affected walls and partitions, and number of markings.
- C. Samples: Submit two samples, of size similar to that required for project, illustrating font, wording, and method of application.

1.05 FIELD CONDITIONS

- A. Do not install adhered markings when ambient temperature is lower than recommended by label or sign manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Partition Identification Labels:
 - 1. Fire Wall Signs, Inc: www.firewallsigns.com.

2.02 FIRE AND SMOKE ASSEMBLY IDENTIFICATION

- A. Regulatory Requirements: Provide signs or stenciling complying with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of ICC (IBC).
 - 1. Include lettering not less than 3 inches in height with a minimum 3/8" stroke.
- B. Adhered Fire and Smoke Assembly Identification Signs: Printed vinyl sign with factory applied adhesive backing.
- C. Applied Fire and Smoke Assembly Identification: Identification markings applied to partition with paint and a code compliant stencil. See Section 09 91 23 for paint.
- D. Languages: Provide sign markings in English.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.02 PREPARATION

- A. See Section 09 91 23 for substrate preparation for painted markings.

3.03 INSTALLATION

- A. Locate markings as required by ICC (IBC).
- B. Install adhered markings in accordance with manufacturer's instructions.
- C. Install applied markings in accordance with Section 09 91 23.
- D. Install neatly, with horizontal edges level.

- E. Protect from damage until Date of Substantial Completion; repair or replace damaged markings.

END OF SECTION

**SECTION 07 14 00
FLUID-APPLIED WATERPROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fluid-Applied Waterproofing.

1.02 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-- Tension 2016 (Reapproved 2021).
- B. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact 2020.
- C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a, with Editorial Revision (2023).

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with the installation of other components that comprise the exterior building envelope.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- B. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
- C. Compatibility: Submit letter from manufacturer stating that materials proposed for use are permanently chemically compatible and adhesively compatible with adjacent materials proposed for use. Submit letter from manufacturer stating that cleaning materials used during installation are chemically compatible with each of the adjacent materials proposed for use.

1.05 QUALITY ASSURANCE

- A. Manufacturer: System shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of waterproofing and air barrier products. Manufacturers proposed for use but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past 5 years.
- B. Installer Qualifications:
 - 1. Company specializing is performing the work of this section as a primary occupation, which has at least 3 years of documented experience and is certified in writing by the manufacturer.
 - 2. Installer must show evidence of adequate equipment and trained field personnel to successfully complete the project in a timely manner.
 - 3. Company performing the work of this section will also perform the work of all other related air and weather barrier sections including, but not limited to:
 - a. Section 07 25 00 - Weather Barriers
- C. Materials: Fluid applied waterproofing material shall be cold vulcanized two part synthetic rubber based system free of isocyanates and bitumen. For each type of material required for the work of this section and related sections of performance, provide primary materials, associated materials, and material assemblies which are the products of one manufacturer.
- D. Pre-Installation Conference: A pre-installation conference shall be held two weeks prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Attendance shall include the contractors of adjacent systems and substrates, and the waterproofing manufacturer representative. Agenda for meeting shall include but not be limited to the following:

1. Review of submittals.
2. Review of surface preparation, minimum curing period and installation procedures.
3. Review of special details and flashings.
4. Sequence of construction, responsibilities and schedule for subsequent operations.
5. Review of mock-up requirements.
6. Review of inspection, testing, protection and repair procedures.

1.06 MOCK-UP

- A. Construct mock-up to represent finished work including inside and outside corners. Incorporating back-up wall, cladding, window and doorframe and sill, insulation, flashing and any other critical junction (roof, foundation, etc).

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.
- B. Do not double-stack pallets of fluid applied membrane components on the job site. Provide cover on top and all sides, allowing for adequate ventilation.
- C. Protect fluid-applied membrane components from freezing and extreme heat.
- D. Sequence deliveries to avoid delays, but minimize on-site storage.

1.08 PROJECT CONDITIONS

- A. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.
- B. Proceed with installation only when substrate construction and preparation work is complete and in condition to receive membrane waterproofing.

1.09 WARRANTY

- A. Fluid Applied Waterproofing Membrane: Provide written 5 year material warranty issued by the membrane manufacturer upon completion of the work.
- B. Contractor shall correct defective work within a two year period after date of substantial completion, remove and replace materials concealing waterproofing at no extra cost to the Owner. Bentonite grouting shall not be acceptable.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Fluid applied membrane, self-curing, synthetic rubber based material:
 1. Basis-of-Design: Provide W.R. Grace; Procort System or a comparable product by one of the following:
 - a. Henry Company. Aqua-Bloc System.
 - b. Carlisle, Barricoat System.
 - c. TK Products, TK-Hydromax 2002 VOC.
 - d. Tremco, TREMproof 260.
 - e. Note that the same manufacturer of material used for Section 07 25 00 Weather Barriers of this project, shall be the same manufacturer of material used for this section. Written manufacturer compatibility and adhesion certification shall be required.

2.02 FLUID APPLIED WATERPROOFING MATERIALS

- A.
- B. Synthetic Rubber Waterproofing: Cold-applied synthetic polymer complying with ASTM D3468; one or two component, quick setting.
 1. Suitable for installation over concrete substrates.

2. Volatile Organic Compound content: < 75 g/L.
3. Elongation: 500 percent, measured in accordance with ASTM D 412.
4. Water Vapor Permeability: 0.08 perm inch, max., measured in accordance with ASTM E96/E96M.
5. Peel Adhesion to Concrete: 5 lb./inch, according to ASTM D 903 Modified.
6. Minimum Application Temperature: 20 deg. F.
7. Brittleness Temperature: minus 40 degrees F, measured in accordance with ASTM D746.

2.03 INSULATION

- A. Rigid Insulation: Specified in Section 07 21 00 Thermal Insulation.

2.04 ACCESSORIES

- A. Prefabricated Drainage Composite: Hydroduct 660 Drainage Composite by Grace Construction Products for horizontal surfaces. Hydroduct 220 Drainage Composite by Grace Construction Products for all vertical surfaces. Drainage composite shall be designed to promote positive drainage while serving as a protection course.
- B. Miscellaneous Materials: Tape and other accessories specified or acceptable to manufacturer of fluid applied waterproofing membrane.

PART 3 EXECUTION

3.01 EXAMINATION

- A. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 PREPARATION OF SUBSTRATE

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Tie-holes and "bugholes" larger than 1/2 inch in diameter or deeper than 1/8 inch, or both, should be either pretreated per manufacturer's instructions or repaired with with a lean concrete mix or grout. See ASTM D 5295, Preparation of Concrete Surfaces for Adhered Membrane Waterproofing Systems, for further details on substrate preparation.
- C. Cracked, pitted, honeycombed or heavily bugholed surfaces can be filled by spraying from close in (10" to 12") but high material usage with result. Under these circumstances it may be more efficient to fill the surface with a parge coat of lean mortar mix before application of the waterproofing. It is also acceptable to fill in gaps with a compatible sealant or caulk.
- D. Cast-In-Place Concrete Substrates:
 1. Surface shall be free of any visible water, frost, or ice.
 2. Fill form tie rod holes with concrete and finish flush with surrounding surface.
 3. Repair bugholes greater than 1/2 inch in depth and 1/4 inch in diameter deep and finish flush with surrounding surface.
 4. Remove scaling to sound, unaffected concrete and repair exposed area.
 5. Grind irregular construction joints to suitable flush surface.
- E. Masonry Substrates: Apply waterproofing over concrete block and brick with smooth trowel-cut mortar joints or parge coat.

3.03 INSTALLATION

- A. Apply waterproofing in accordance with manufacturer's instructions, including, but not limited to, the following:
 1. Apply minimum 0.060 in. in all areas to be waterproofed. Apply minimum 0.120 inches in all detail areas.
 2. If area to be waterproofed is in direct sunlight and temperature is rising, apply "scratch coat" (a thin application of fluid applied waterproofing) prior to the full application of the waterproofing membrane.

3. In applications where a minimum slope of 0.13 in./ft cannot be achieved, a two coat application of membrane is recommended to achieve the total thickness.
 4. Apply protection board and related materials in accordance with manufacturer's recommendations.
 5. For vertical applications, install board insulation before installing drainage panels.
- B. Install flexible flashings and seal into waterproofing material. Seal items penetrating through membrane (i.e. water piping, electrical conduit, etc.) with flashings.
- C. Seal membrane and flashings to adjoining surfaces.

3.04 CLEANING AND PROTECTION

- A. Remove any masking materials after installation. Clean any stains on materials which would be exposed in the completed work.
- B. Protect completed membrane waterproofing from subsequent construction activities as recommended by manufacturer.
- C. Do not leave installed materials exposed to weather for longer than 30 days.

END OF SECTION

**SECTION 07 21 00
THERMAL INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Board insulation at cavity wall construction, perimeter foundation wall, underside of floor slabs, and exterior wall behind wall finish.

1.02 RELATED REQUIREMENTS

- A. Section 07 54 00 - PVC/KEE Thermoplastic Membrane Roofing: Installation requirements for board insulation over low slope roof deck specified in this section.

1.03 REFERENCE STANDARDS

- A. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications 2013 (Reapproved 2019).
- B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2022.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- D. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components 2023.

1.04 SUBMITTALS

- A. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 QUALITY ASSURANCE

- A. Products provided under this section and installed at part of an exterior wall assembly shall have passed NFPA 285 testing as part of a wall assembly matching those detailed on drawings

PART 2 PRODUCTS

2.01 APPLICATIONS

- A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.
- B. Insulation at Perimeter of Foundation: Extruded polystyrene board.
- C. Insulation Inside Masonry Cavity Walls: Polyisococyanurate board.
- D. Insulation Behind Rainscreen Panels: Mineral wool fiberboard insulation.

2.02 FOAM BOARD INSULATION MATERIALS

- A. Extruded Polystyrene (XPS) Board Insulation: Complies with ASTM C578 with either natural skin or cut cell surfaces.
 - 1. Type: ASTM C578, Type IV.
 - 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) per 1 inch thickness at 75 degrees F mean temperature.
 - 5. Complies with fire resistance requirements 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 IV, 0.3 percent by volume, maximum, by total immersion.
 - 8. Manufacturers:

- a. Dow Chemical Company: www.dow.com/#sle.
 - b. Owens Corning Corporation: www.ocbuildingspec.com/sle.
- B. Foil Faced Polyisocyanurate Board Insulation: Rigid cellular foam, complying 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) Thermal Resistance, R-value: At 1-1/2 inch thick; 9.0 at 75 degrees F.
 2. Board Thickness: As indicated on drawings.
 3. Board Edges: Square.
 4. Manufacturers:
 - a. Atlas Roofing Corporation; EnergyShield Pro Continuous Wall Insulation: www.atlasroofing.com/sle.
 - b. Hunter Panels, LLC; Xci Foil: www.hunterxci.com/sle.
 - c. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.03 FIBERBOARD INSULATION MATERIALS

- A. Mineral Wool Fiberboard Insulation for Exterior Walls: Semi-rigid mineral fiber, ASTM C612 or ASTM C553; unfaced flame spread index of 0 (zero) when tested in accordance with ASTM E84, dark color.
1. Smoke Developed Index: 0 (zero), when tested in accordance with ASTM E84.
 2. Thickness: As indicated on drawings.
 3. Thermal Resistance: R-value of 4.2 degrees F hr sq ft/Btu per inch at 75 degrees F, minimum, when tested according to ASTM C518.
 4. Maximum Density: 6.0 pounds per cubic foot, nominal.
 5. Manufacturers:
 - a. Thermafiber, Inc; RainBarrier: www.thermafiber.com.
 - b. ROCKWOOL (ROXUL, Inc); CAVITYROCK: www.rockwool.com.
 - c. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.04 ACCESSORIES

- A. Continuous Insulation (CI) Support Systems (Thermal Clips): Composite framing support (CFS) system consisting of girts that support CI and provide cladding attachment support integrated with exterior wall cladding.
1. Substrate: Attach CFS system components to exterior sheathing over metal stud framing.
 2. Depth of Girts: As required for thickness of insulation.
 3. Spacing of Girts: 16 inches on center, vertically.
 4. Approved Manufacturers:
 - a. Cascadia Windows LTD.: Cascadia Clip.
 - b. Advanced Architectural Products: SMARTci.
 - c. Northern Facades, ISO Clip.
 - d. Nvelope, Eko Thermobrackets.
 5. Insulation clip system design: Thermal spacer designed for cladding system attachment.
 6. Clip System, including support angles and final furring attachment, must be coordinated with each cladding system manufacturers.
 7. All fastener penetrations through air and vapor shall be fully sealed with compatible sealant where clip system is attached to substrate.
 8. No push pin installations allowed for insulation. Insulation to be retained without fasteners.
 9. Insulation to be installed in staggered layers with no gaps or voids.
 10. Transition between the insulation clip system and the cladding final attachment will occur within the staggered layers of the insulation. Attachment of the cladding to the insulation clip may not occur at the outside face of the final layer of insulation.
 11. System to be designed to accommodate the following maximum live load deflection in the plane of the exterior wall:

- a. Verify maximum live load deflection with structural requirements or 3/8 inch, whichever is greater.
12. All components of support system from face of insulation to supports for wall panels shall be painted black.
13. Products:
 - a. Advanced Architectural Products, LLC; SMARTci Plus 3-in-1 System: www.smartcisystems.com.
 - b. Cascadia Windows LTD; Cascadia Clip.
 - c. Northern Facades, ISO Clip.
 - d. Nvelope, Eko Thermobrackets.
 - e. Substitutions: See Section 01 25 00 - Substitution Procedures.
- B. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

- A. Apply adhesive to back of boards:
- B. Install boards horizontally on foundation perimeter.
 1. Install in running bond pattern.
 2. Butt edges and ends tightly to adjacent boards and to protrusions.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION AT CAVITY WALLS

- A. Secure impale fasteners to substrate at following frequency:
- B. Install boards to fit snugly between wall ties.
- C. Install boards horizontally on walls.
- D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- E. Seal joints with foil tape.

3.04 BOARD INSTALLATION USING COMPOSITE FRAMING SUPPORT (CFS) SYSTEM

- A. Install CFS system in accordance with manufacturer's installation instructions.
- B. Install CFS system in compliance with system orientation, sizes, and locations as indicated on drawings.
- C. Install CFS system to fill-in exterior wall spaces without gaps or voids, and do not compress insulation boards.
- D. No push pin installations allowed for insulation. Insulation to be retained without fasteners.
- E. Insulation to be installed in staggered layers with no gaps or voids.
- F. Trim insulation neatly to fit spaces, and insulate miscellaneous gaps and voids with approved expandable foam sealant.
- G. Transition between the insulation clip system and the cladding final girt attachment will occur within the staggered layers of the insulation. Attachment of the cladding to the insulation clip may not occur at the outside face of the final layer of insulation.

3.05 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.

3.06 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

**SECTION 07 21 19
FOAMED-IN-PLACE INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Foamed-in-place insulation.
- B. Protective intumescent coating.

1.02 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus 2021.
- B. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics 2019.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- D. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a, with Editorial Revision (2023).
- E. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials 2021a.

1.03 SUBMITTALS

- A. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.
- B. Certificates: Certify that products of this section meet or exceed specified requirements.
- C. Manufacturer's Installation Instructions: Indicate special procedures, and perimeter conditions requiring special attention.
- D. Manufacturer Qualification: Submit documentation of current evaluation of proposed manufacturer and materials.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three years of documented experience.

1.05 FIELD CONDITIONS

- A. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.
- B. Do not apply foam when temperature is within 5 degrees F of dew point.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Foamed-In-Place Insulation: Closed cell polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.
 - 1. Thermal Resistance: R-value of 5.0, minimum, per 1 inch thickness at 75 degrees F mean temperature when tested in accordance with ASTM C518.
 - 2. Water Vapor Permeance: Vapor retarder; 2 perms, maximum, when tested at intended thickness in accordance with ASTM E96/E96M, desiccant method.
 - 3. Water Absorption: Less than 2 percent by volume, maximum, when tested in accordance with ASTM D2842.
 - 4. Air Permeance: 0.04 cfm per square foot, maximum, when tested at intended thickness in accordance with ASTM E2178 at 1.57 psf.
 - 5. Closed Cell Content: At least 90 percent.
 - 6. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.

7. Manufacturers:
 - a. BASF Corporation; SPRAYTITE 178 with DC 315 intumescent coating: www.spf.basf.com.
 - b. Demilec LLC; Heatlok HFO Pro: www.demilec.com.
 - c. Icynene Lapolla; ProSeal with DC315 intumescent coating: www.icynene.com.

2.02 ACCESSORIES

- A. Primer: As required by insulation manufacturer.
- B. Protective Coating: Intumescent coating of type recommended by insulation manufacturer and as required to comply with applicable codes.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify work within construction spaces or crevices is complete prior to insulation application.
- B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation or overcoat adhesion.

3.02 PREPARATION

- A. Mask and protect adjacent surfaces from over spray or dusting.
- B. Apply primer in accordance with manufacturer's instructions.

3.03 APPLICATION

- A. Apply insulation in accordance with manufacturer's instructions.
- B. Apply insulation by spray method, to a uniform monolithic density without voids.
- C. In exposed areas apply overcoat, apply monolithically, without voids to fully cover foam insulation, to achieve fire rating required.
- D. Patch damaged areas.
- E. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

3.04 PROTECTION

- A. Do not permit subsequent construction work to disturb applied insulation.

END OF SECTION

**SECTION 07 25 00
WEATHER BARRIERS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vapor Retarders: Materials to make exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls water vapor resistant and air tight.
- B. Air Barriers: Materials that form a system to stop passage of air through exterior walls, joints between exterior walls and roof, and joints around frames of openings in exterior walls.

1.02 DEFINITIONS

- A. Weather Barrier: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Air Barrier: Air tight barrier made of material that is relatively air impermeable but water vapor permeable, both to the degree specified, with sealed seams and with sealed joints to adjacent surfaces. Note: For the purposes of this specification, vapor impermeable air barriers are classified as vapor retarders.
- C. Vapor Retarder: Air tight barrier made of material that is relatively water vapor impermeable, to the degree specified, with sealed seams and with sealed joints to adjacent surfaces.
 - 1. Water Vapor Permeance: For purposes of conversion, $57.2 \text{ ng}/(\text{Pa s sq m}) = 1 \text{ perm}$.

1.03 REFERENCE STANDARDS

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency current edition.
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection 2021.
- C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a, with Editorial Revision (2023).

1.04 PERFORMANCE REQUIREMENTS

- A. Air barrier shall be capable of performing as a continuous vapor-permeable air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Water barrier shall be capable of performing as a continuous non-vapor-permeable air and water barrier flashed to discharge to exterior condensation and water penetration. Water barrier membrane assemblies shall be capable of accommodatng substrate movement and of sealing substrate expansion and control joints, construction material changes, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

1.05 SUBMITTALS

- A. Product Data: Provide data on material characteristics.
- B. Shop Drawings: Provide drawings of special joint conditions.
 - 1. Include details of interface between air barriers and water barriers.
- C. Manufacturer's Installation Instructions: Indicate preparation and installation methods.
- D. Compatibility Certification: Provide certification of compatibility of all products to be provided in this section and adjacent products that are part of the building envelope system.
- E. Testing agency reports.

1.06 QUALITY ASSURANCE

- A. Provide products for all components specified in the section from the same manufacturer, or provide certification of compatibility of all products not provided by same manufacturer.
- B. Products provided under this section and installed at part of an exterior wall assembly shall have passed NFPA 285 testing as part of a wall assembly matching those detailed on drawings

1.07 MOCK-UP

- A. Mockups: Before beginning installation of air/moisture barrier, build mockups of exterior wall assembly, 150 sq. ft., incorporating backup wall construction, external cladding, window, door frame and sill, insulation, and flashing to demonstrate surface preparation, crack and joint treatment, and sealing of gaps, terminations, and penetrations of air barrier membrane.
 - 1. Coordinate construction of mockup to permit inspection by Owner's testing agency of air barrier before external insulation and cladding is installed.
 - 2. Include junction with roofing membrane, building corner condition, and foundation wall intersection.
 - 3. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
 - 4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.08 FIELD CONDITIONS

- A. Maintain temperature and humidity recommended by the materials manufacturers before, during and after installation.

1.09 DELIVERY, STORAGE AND HANDLING

- A. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by manufacturer.
- B. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- C. Store rolls according to manufacturer's written instructions.
- D. Protect stored materials from direct sunlight.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Apply weather barriers within the range of ambient and substrate temperatures recommended by weather barrier manufacturers. Protect substrates from environmental conditions that affect performance of weather barriers. Do not apply weather barriers to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 PRODUCTS

2.01 VAPOR PERMEABLE AIR BARRIER

- A. Vapor Permeable Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
 - 1. Air Barrier Membrane:
 - a. Air Permeance: 0.004 cubic feet per minute per square foot, maximum, when tested in accordance with ASTM E2178.
 - b. Water Vapor Permeance: 5 perms, minimum, when tested in accordance with ASTM E96/E96M, Procedure B.
 - c. Elongation: 300 percent, minimum, when tested in accordance with ASTM D412.
 - d. Sealants, Tapes and Accessories: As recommended by coating manufacturer.
 - e. Manufacturers:
 - 1) Carlisle Coatings and Waterproofing, Inc; Fire Resist Barritech-VP: www.carlisleccw.com/#sle.
 - 2) GCP Applied Technologies; Perm-A-Barrier VPL: www.gcpat.com/#sle.
 - 3) Henry Company; Air-Bloc 33MR: www.henry.com/#sle.
 - 4) TK Products, AirMax 2104 VP: www.tkproducts.com.
 - 5) Tremco Commercial Sealants & Waterproofing; ExoAir 230: www.tremcosealants.com.

2.02 NON-PERMEABLE AIR AND WATER BARRIER (VAPOR RETARDER)

- A. Non-Permeable Air and Water Barrier Sheet: ASTM D1970/D1970M.
 - 1. Type: Rubberized asphalt bonded to thermoplastic sheet, self-adhesive.
 - 2. Thickness: 40 mil, 0.040 inch, nominal.
 - 3. Water Vapor Permeance: 0.05 perm, maximum, when tested in accordance with ASTM E96/E96M.
 - 4. Seam and Perimeter Tape: As recommended by sheet manufacturer.
 - 5. Manufacturers:
 - a. Carlisle Coatings and Waterproofing, Inc; CCW-705 Air and Vapor Barrier Sheet: www.carlisleccw.com/#sle.
 - b. GPC Applied Technologies (Grace), Perm-A-Barrier.
 - c. Henry Company; Blueskin SA: www.henry.com/#sle.
 - d. Tremco Sealants and Waterproofing; ExoAir 110AT.
- B. Non-Permeable Air and Water Barrier Coating (Water Barrier Membrane): Liquid applied, resilient, UV-resistant coating and associated joint treatment.
 - 1. Water Vapor Permeance: Between 0.02 and 0.08 perm, when tested in accordance with ASTM E96/E96M.
 - 2. VOC Content: Less than 50 g per L when tested in accordance with 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Suitable for use on concrete, masonry, plywood and gypsum sheathing.
 - 4. Joint Preparation Treatment: Coating manufacturer's recommended method, either tape or reinforcing mesh saturated with coating material.
 - 5. Basis-of-Design:
 - a. GPC Applied Technologies (Grace), Perm-A-Barrier Liquid.
 - b. Other Acceptable Products:
 - 1) Carlisle Coatings and Waterproofing, Inc; Barriseal: www.carlisleccw.com/#sle.
 - 2) Henry Company; Air-Bloc 32 MR: www.henry.com/#sle.
 - 3) TK Products, AirMax 2102 VOC; www.tkproducts.com.
 - 4) Tremco Sealants and Waterproofing, ExoAir 120 Fluid-applied Air and Vapor Retarder membrane; www.tremcosealants.com.
 - 5) Substitutions: See Section 01 25 00 - Substitution Procedures.
 - 6. Joint Filler: As recommended by coating manufacturer and suitable to the substrate.

2.03 ACCESSORIES

- A. Transition Membrane: A 40 mil self-adhering waterproofing used for flashing around beams, columns, and wall openings (including window, door and curtain wall frames, louvers, etc.); consisting of 36 mils of rubberized asphalt, integrally bonded to a 4 mil high-density cross-laminated polyethylene film. Membrane shall be interleaved with disposable silicone-coated release paper until installed. Fully-supported self-adhered membranes must be provided at all corners, (inside and outside), transitions, and changes in substrate. Liquid applied membranes that utilize mesh reinforcements will not be allowed.
 - 1. Basis-of-Design Product: GPC Applied Technologies (Grace) Perm-A-Barrier Detail Membrane.
 - 2. Other Acceptable Manufacturers:
 - a. Henry Corporation
 - b. Carlisle Coatings & Waterproofing
 - c. Tremco.
 - d. TK Products.
- B. Flexible Membrane Through-Wall Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
 - 1. Thickness: 40 mil (32 mil rubberized asphalt laminated to 8 mil high-density polyethylene film)

2. Basis-of-Design Product: GCP Applied Technologies (Grace) Perm-A-Barrier Wall Flashing.
3. Other Acceptable Manufacturers:
 - a. Henry Corporation.
 - b. Carlisle Coatings & Waterproofing.
 - c. TK Products.
 - d. Tremco Sealants and Waterproofing.
- C. Detailing Compound: Two-part, elastomeric, trowel grade material for use with self-adhered membranes and tapes.
 1. Basis-of-Design Product: GCP Applied Technologies (Grace) Bituthene Liquid Membrane.
 2. Other Acceptable Manufacturers:
 - a. Henry Corporation.
 - b. Carlisle Coatings & Waterproofings.
 - c. TK Products.
 - d. Tremco Sealants and Waterproofing.
- D. Metal Drip Edge: Provide metal drip edge where flashing is exposed or partially exposed and where indicated, complying with Division 7 Section "Sheet Metal Flashing and Trim" and as follows:
 1. Stainless Steel: ASTM A 240/A 240M, Type 304, 0.016 inch thick.
 - a. Metal Drip Edges: Fabricate from stainless steel. Extend into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
 2. Basis-of-Design Product: Hohmann & Barnard 26 gage minimum, 1-1/2" minimum, stainless steel hemmed drip plate.
- E. Miscellaneous Materials: Tape and other accessories specified or acceptable to manufacturer of fluid-applied air and vapor barrier membrane.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and conditions are ready to accept the work of this section.
- B. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the Contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected
- C. Verify that items built-in under other sections are properly located, sized, and securely installed.

3.02 PREPARATION

- A. Protect adjacent work areas and finish surfaces from damage during installation.
- B. Refer to manufacturer's literature for requirements for preparation of substrates. Surfaces shall be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Use repair materials and methods which are acceptable to manufacturer of fluid-applied air and vapor barrier.
- C. Cast-In-Place Concrete Substrates:
 1. Surface shall be free of any visible water, frost, or ice.
 2. Fill form tie rod holes with concrete and finish flush with surrounding surface.
 3. Repair bug holes greater than 1/2 inch in diameter and 1/4 inch deep, and finish flush with surrounding surface.
 4. Remove scaling to sound, unaffected concrete, and repair exposed area.
 5. Grind irregular construction joints and protrusions taller than 1/8" .to suitable flush surface.
- D. Exterior Sheathing Panels: Ensure that the boards are sufficiently stabilized with corners and edges fastened with appropriate screws. Pre-treat all board joints with 2 to 3 inch wide,

reinforced self-adhesive tape, or fiberglass mesh-style gypsum board tape. Fill gaps greater than 1/4 inch with mastic or caulk, allowing sufficient time for full curing before application of tape and fluid-applied membrane

- E. Masonry Substrates: Apply air and vapor barrier over concrete block with smooth flush mortar joints. Fill all voids and holes, particularly in the mortar joints, with a lean mortar mix, non-shrinking grout or parge coat.
- F. Related Materials: Treat joints and install flashing as recommended by membrane manufacturer.

3.03 INSTALLATION

- A. Install materials in accordance with manufacturer's instructions.
- B. Air Barriers: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- C. Vapor Retarders: Install continuous air tight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.
- D. Application of Fluid-Applied Membrane:
 - 1. Spray- or trowel-apply a continuous uniform film at minimum 60 mils dry film thickness using multiple, overlapping passes.
 - 2. When spraying, use a cross-hatching technique (alternating horizontal and vertical passes) to ensure even thickness and coverage.
 - 3. When spraying, use high pressure, multi-component, airless spray equipment approved by material manufacturer.
 - 4. Carry membrane into any openings a minimum of 2 inches.
 - 5. Seal all brick-ties and other penetrations as work progresses.
- E. Application of Transition Membrane:
 - 1. After allowing the fluid-applied membrane to cure to tack-free finish, apply transition membrane with a minimum overlap of 3 inches onto each surface at all beams, columns and joints as indicated on Drawings.
 - 2. Tie-in to window and door frames, spandrel panels, roof and floor intersections and changes in substrate.
 - a. Install products in accordance to manufacturer's installation instructions, necessary to provide a continuous weather barrier for all transitions in plane.
 - 3. Use pre-cut, easily-handled lengths for each location.
 - 4. Remove silicone-coated release paper and position membrane flashing carefully before placing it against the surface.
 - 5. When properly positioned, place against surface by pressing firmly into place using hand roller.
 - 6. Overlap adjacent pieces 2 inches, and roll all seams with a hand roller.
 - 7. Seal top edge of flashing with sealant compatible with all surrounding materials.
 - 8. Transition flashing is not to be pre-installed prior to application of fluid-applied membrane, apply transition flashing as above. Spray or trowel a continuous uniform film of Fluid-Applied Membrane at minimum 60 mils dry film thickness using multiple, overlapping passes, with a minimum overlap of 3 inches between the fluid applied and the transition flashing
- F. Application of Flexible Membrane Wall Flashing:
 - 1. Precut pieces of flashing to easily handled lengths for each location.
 - 2. Remove silicone-coated release paper and position flashing carefully before placing it against the surface.
 - 3. When properly positioned, place against surface by pressing firmly into place using hand roller. Fully-adhere flashing to substrate to prevent water from migrating under flashing.
 - 4. Overlap adjacent pieces 2 inches and roll all seams with a hand roller.

5. Trim bottom edge 1/2 inch back from exposed face of the wall. Flashing shall not be permanently exposed to sunlight.
 6. At heads, sills and all flashing terminations, turn up flashing ends a minimum of 2 inches, and make careful folds to form an end dam, with the seams sealed.
 7. Seal top edge of flashing with sealant compatible with all surrounding materials.
 8. Do not allow the rubberized-asphalt surface of the flashing membrane to come in contact with poly- sulfide sealants, creosote, uncured coal tar products, or ethylene-propylene-diene-terpolymer products (EPDM).
- G. Installation of the primary membrane is to occur prior to all inside and outside corners, fenestration rough openings and penetrations, then install the initial application of detail membrane.

3.04 TOLERANCES

- A. System to be installed to accommodate the following maximum live load deflection in the plane of the exterior wall:
1. Verify maximum live load deflection with structural requirements or 3/8 inch, whichever is greater.

3.05 CLEANING AND PROTECTION

- A. Remove any masking materials after installation. Clean any stains on materials which would be exposed in the completed work using procedures as recommended by manufacturer.
- B. Fluid-applied air and vapor barrier membrane is not suitable for permanent exposure and should be protected from the effects of sunlight.
- C. Schedule work to ensure that the membrane system is covered as soon as possible after installation. Protect membrane system from damage during subsequent operations. If the air and vapor barrier membrane system cannot be covered within sixty (60) days after installation, apply temporary UV protection such as dark plastic sheet or tarpaulins.

3.06 FIELD QUALITY CONTROL

- A. Do not cover installed fluid-applied air and vapor barrier until required inspections have been completed by testing agency.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections and prepare test reports.
- C. The testing agency shall verify proper application thickness via a wet mil gauge during the application process.
- D. Testing agency shall perform "Bubble Gun" testing in accordance ASTM E1186 at no less than six (6) areas, or visual inspections at Owner/Architect's discretion.

3.07 PROTECTION

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

**SECTION 07 26 00
UNDER-SLAB VAPOR BARRIER**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Vapor Barrier
- B. Seam Tape/Mastic
- C. Pipe Boots

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 – Cast-In-Place Concrete
- B. Section 07 21 00 – Thermal Insulation

1.03 REFERENCE STANDARDS

- A. The following standards and publications are applicable to the extent referenced in the text.
- B. American Society for Testing and Materials (ASTM)
 - 1. ASTM E 1745-97 (2004) Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs
 - 2. ASTM E 154-99 (2005) Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs
 - 3. ASTM E 96-05 Standard Test Methods for Water Vapor Transmission of Materials
 - 4. ASTM F 1249-06 Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor
 - 5. ASTM E 1643-11 Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
- C. American Concrete Institute (ACI)
 - 1. ACI 302.1R-04 Vapor barrier component (plastic membrane) is not less than 10 mils thick.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate with the installation of other components that comprise the exterior building envelope.

1.05 SUBMITTALS

- A. Installation instructions: Submit manufacturer's installation instructions for placement, seaming, and pipe boot installation.
- B. Compatibility: Submit letter from manufacturer stating that materials proposed for use are permanently chemically compatible and adhesively compatible with adjacent materials proposed for use. Submit letter from manufacturer stating that cleaning materials used during installation are chemically compatible with each of the adjacent materials proposed for use.

1.06 QUALITY ASSURANCE

- A. Manufacturer: System shall be manufactured and marketed by a firm with a minimum of 15 years experience in the production and sales of waterproofing and air barrier products. Manufacturers proposed for use but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past 5 years.
- B. Installer Qualifications:
 - 1. Company specializing in performing the work of this section as a primary occupation, which has at least 3 years experience.
- C. Materials: For each type of material required for the work of this section, provide primary materials, associated materials, and material assemblies which are the products of one manufacturer.

- D. Pre-Installation Conference: A pre-installation conference shall be held two weeks prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Attendance shall include the contractors of adjacent systems and substrates, and the manufacturer representative. Agenda for meeting shall include but not be limited to the following:
1. Requirements for Building Envelope Commissioning.
 2. Review of submittals.
 3. Review of surface preparation and installation procedures.
 4. Review of special details and flashings.
 5. Sequence of construction, responsibilities and schedule for subsequent operations.
 6. Review of inspection, testing, protection, and repair procedures.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations. Remove damaged material from the site and dispose of in accordance with applicable regulations.
- B. Do not double-stack pallets of components on the job site. Provide cover on top and all sides, allowing for adequate ventilation.
- C. Sequence deliveries to avoid delays, but minimize on-site storage.

1.08 PROJECT CONDITIONS

- A. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials and products used.
- B. Proceed with installation only when substrate construction and preparation work is complete and in condition to receive vapor barrier.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Multi-layer, reinforced polyethylene or equivalent, complying with ASTM E 1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single ply polyethylene is PROHIBITED.
1. Thickness: Minimum 15 mil, 0.015 inch.
 2. Water Vapor Permeance: ASTM E 96 or ASTM F 1249; less than 0.01 perm after mandatory conditioning tests per ASTM E 1745 (7.1.1 - 7.1.5)
 3. Tensile Strength: ASTM D882 or ASTM E 154; minimum 57lbf/in.
 4. Puncture Resistance: ASTM D 1709, Class A; minimum 2200 grams.
- B. Acceptable Manufacturers:
1. Henry Company, Moistop Ultra15: www.henry.com.
 2. Raven Industries, Inc; Vapor Block 15: www.ravenind.com.
 3. W.R. Meadows, Inc; Perminator 15 Mil: www.wrmeadows.com.
 4. Stego Industries; Stego Wrap 15 mil: www.stegoindustries.com

2.02 ACCESSORIES

- A. Seam Tape:
1. Permeance less than 0.3 perms per ASTM F 1249 or ASTM E 96
- B. Vapor Proofing Mastic:
1. Permeance less than 0.3 perms per ASTM F 1249 or ASTM E 96
- C. Pipe Boots
1. Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer's instructions.

PART 3 EXECUTION

3.01 EXAMINATION

- A. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.
- B. Ensure that subsoil is approved by Geotechnical Engineer.
 - 1. Level and tamp or roll aggregate, sand or granular base.

3.02 INSTALLATION

- A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E 1643-11.
 - 1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete pour. Level and compact base material
 - 2. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments (such as dowels, waterstops, or any other site condition requiring early termination of the vapor barrier). At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself.
 - 3. Overlap joints 6 inches and seal with manufacturer's tape.
 - 4. Apply seam tape to a clean and dry vapor barrier.
 - 5. Seal all penetrations (including pipes) per manufacturer's instructions.
 - 6. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
 - 7. If non-permanent stakes are driven through vapor retarder, repair as recommended by vapor retarder manufacturer.
 - 8. Repair damaged areas by cutting patches of vapor barrier material of similar (or better) permeance, puncture and tensile, overlapping damaged area 6 inches and taping all four sides with tape.

3.03 CLEANING AND PROTECTION

- A. Protect membrane in accordance with manufacturer's recommendations until placement of concrete. Inspect for damage just prior to placement of concrete and make repairs in accordance with manufacturer's recommendations.

3.04 FIELD QUALITY CONTROL

- A. Do not place concrete until required inspections have been completed by manufacturer's technical representative.

3.05 SCHEDULE

- A. Follow the installation sequence as directed by the manufacturer specification.

END OF SECTION

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SECTION 07 62 00
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, and trim.
- B. Sealants for joints within sheet metal fabrications.

1.02 REFERENCE STANDARDS

- A. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- B. CDA A4050 - Copper in Architecture - Handbook current edition.
- C. SMACNA (ASMM) - Architectural Sheet Metal Manual 2012.

1.03 SUBMITTALS

- A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
- B. Samples for Verification: For each type of exposed finish required, prepared on samples of size below:
 - 1. Sheet Metal Flashing: 12 inches long. Include fasteners, closures, and other attachments.
 - 2. Trim: 12 inches long. Including fasteners and other exposed accessories.

1.04 QUALITY ASSURANCE

- A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Pre-Finished Galvanized Steel: ASTM A653, with G90/Z275 zinc coating, thickness as indicated, shop pre-coated with PVDF coating.
 - 1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
 - 2. Color:
- B. Stainless Steel: ASTM A666, Type 304 alloy, soft temper, thickness as indicated; smooth No. 4 - Brushed finish.

2.02 FABRICATION, GENERAL

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Form pieces in longest possible lengths.
- C. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- E. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.

2.03 SHEET METAL FABRICATIONS

- A. Copings: Fabricate in minimum 96 inch long, but not exceeding 10 foot long sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of

external leg. Miter corners, seal watertight. Fabricate from the following material:

1. Pre-finished Galvanized Steel: 0.050 inch thick.
- B. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, minimum 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fabricate from the following materials:
1. Pre-finished Galvanized Steel: 0.034 inch thick.
- C. Roof-Penetration Flashing: Fabricate from the following material:
1. Stainless Steel: 0.0187 inch.
- D. Roof-Drain Flashing: Fabricate from the following material:
1. Stainless Steel: 0.0156 inch.

2.04 GUTTER AND DOWNSPOUT FABRICATION

- A. Gutters: SMACNA (ASMM) Rectangular profile.
- B. Downspouts: Rectangular profile.
- C. Gutters and Downspouts: Size indicated. Fabricate from the following material:
 1. Pre-finished Galvanized Steel: 0.034 inch thick.
- D. Accessories: Profiled to suit gutters and downspouts.
 1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
 2. Gutter Supports: Brackets.
 3. Downspout Supports: Brackets.
- E. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
- F. Seal metal joints.

2.05 ACCESSORIES

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.
- B. Fasteners: Stainless steel.
- C. Primer: Zinc chromate type.
- D. Concealed Sealants: Non-curing butyl sealant.
- E. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- F. Plastic Cement: ASTM D4586/D4586M, Type I.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
- B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement and to comply with SMACNA's "Architectural Sheet Metal Manual". Use fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

- B. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- C. Apply plastic cement compound between metal flashings and felt flashings.
- D. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar materials.
- E. Install exposed sheet metal flashing and trim without excessive oil canning, buckling and tool marks.
- F. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds and elastomeric sealant.
- G. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with elastomeric sealant concealed within joints.
- H. Copings: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49.
 - 1. Interlock exterior bottom edge of coping with continuous cleats anchored to substrate at 16 inch centers.
 - 2. Anchor interior leg of coping with screw fasteners at washers at 18 inch centers.
- I. Parapet Scuppers: Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
 - 1. Anchor scupper closure trim flange to exterior wall and seal with elastomeric sealant to scupper.
 - 2. Loosely lock front edge of scupper with conductor head.
- J. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch below scupper discharge.
- K. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof.
- L. Miscellaneous Trims: Install with concealed fastener. Install work with laps, joints and seams that will be permanently watertight.
- M. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- N. Secure gutters and downspouts in place with concealed fasteners.

END OF SECTION

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**SECTION 07 72 00
ROOF ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roof hatches.

PART 2 PRODUCTS

2.01 ROOF HATCHES

- A. Acceptable Products:
 - 1. Babcock-Davis; ThermalMAX: www.babcockdavis.com/#sle.
 - 2. Bilco Company; Type TB: www.bilco.com/#sle.
- B. Roof Hatches, General: Factory-assembled steel frame and cover, complete with operating and release hardware.
 - 1. Style: Provide flat metal covers unless otherwise indicated.
 - 2. Mounting: Provide frames and curbs suitable for mounting on corrugated metal roof deck.
- C. Frames/Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
 - 1. Material: Galvanized steel, 14 gage, 0.0747 inch thick.
 - 2. Curb Height: 12 inches from surface of roof deck, minimum.
- D. Metal Covers: Flush, insulated, hollow metal construction.
 - 1. Capable of supporting 40 psf live load.
 - 2. Material: Galvanized steel; outer cover 14 gage, 0.0747 inch thick, liner 22 gage, 0.03 inch thick.
 - 3. Insulation: Manufacturer's standard 1 inch rigid insulation.
- E. Safety Railing System: Manufacturer's standard accessory safety rail system mounted directly to curb.
 - 1. Comply with 29 CFR 1910.23, with a safety factor of two.
- F. Hardware: Type 316 stainless steel, unless otherwise indicated or required by manufacturer.
 - 1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
 - 2. Hinges: Heavy duty pintle type.
 - 3. Hold open arm with vinyl-coated handle for manual release.
 - 4. Latch: Upon closing, engage latch automatically and reset manual release.
 - 5. Manual Release: Pull handle on interior.
 - 6. Locking: Padlock hasp on interior.
- G. Safety Post; Tubular post with adjustable mounting bracket to fit fixed ladder rung spacing up to 14" on center and clamp brackets to accommodate ladder rungs up to 1-3/4" in diameter. Shall extend up to 42" and automatically locks in fully extended position, yellow powder coat steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions, in manner that maintains roofing weather integrity. Anchor roof accessories securely in place and capable of resisting forces specified. Use fasteners, separators, sealants, and other miscellaneous items as required for completing roof accessory installation. Install roof accessories to resist exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - 1. Underlayment: Where installing exposed-to-view components of roof accessories directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene underlayment.
 - 2. Bed flanges in thick coat of asphalt roofing cement where required by roof accessory manufacturers for waterproof performance.
- C. Install roof accessories level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil canning, buckling, or tool marks.
- D. Seal joints with elastomeric sealant as required by manufacturer of roof accessories.

3.04 CLEANING

- A. Clean installed work to like-new condition.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

**SECTION 07 84 00
FIRESTOPPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Firestopping systems.
- B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 REFERENCE STANDARDS

- A. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems 2015 (Reapproved 2019).
- B. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus 2020.
- C. 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 2013 (Reapproved 2017).
- D. ITS (DIR) - Directory of Listed Products Current Edition.
- E. FM 4991 - Approval Standard of Firestop Contractors 2013.
- F. FM (AG) - FM Approval Guide Current Edition.
- G. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems Current Edition, Including All Revisions.
- H. UL (DIR) - Online Certifications Directory Current Edition.
- I. UL (FRD) - Fire Resistance Directory Current Edition.

1.03 SUBMITTALS

- A. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
- B. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- C. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Certificate from authority having jurisdiction indicating approval of materials used.
- F. Installer Qualification: Submit qualification statements for installing mechanics.

1.04 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 the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
 - 1. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
 - 2. Verification of minimum three years documented experience installing work of this type.
 - 3. Verification of at least five satisfactorily completed projects of comparable size and type.

4. Licensed by local authorities having jurisdiction (AHJ).

1.05 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through fire-resistance-rated constructions, including both empty openings and openings containing penetration items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water:
 1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.
 2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
 - a. Penetrations located outside wall cavities.
 - b. Penetrations located outside fire-resistance-rated shaft enclosures.
- C. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
 1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved, either by installing floor plates or by other means.
 3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
- D. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined by ASTM E84.

1.06 FIELD CONDITIONS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Perimeter Fire Containment Firestopping: Use any system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of the floor assembly.
 1. Movement: In addition, provide systems that have been tested to show movement capability as required.
 2. Temperature Rise: In addition, provide systems that have been tested to show T Rating as required.
- B. Head-of-Wall Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use any system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.

1. Movement: In addition, provide systems that have been tested to show movement capability as required.
- C. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any 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: In addition, provide systems that have been tested to show movement capability as required.
 2. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

2.03 FIRESTOPPING SYSTEMS

- A. Firestopping: Any material meeting requirements.
 1. Fire Ratings: Penetrations through fire-rated assemblies shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479, with a minimum positive pressure differential of 0.01 inch of water, and as follows:
 - a. Wall Penetrations: Shall have an F rating of not less than the required fire-resistance rating of the wall penetrated.
 - b. Horizontal Assembly Penetrations: Shall have an F Rating/T Rating not less than 1 hour but not less than the required rating of the floor penetrated.
 - 1) Exceptions:
 - (a) Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating.
 - (b) Floor penetrations by floor drains, tub drains, or shower drains contained and located within the concealed space of a horizontal assembly do not require a T rating.
 - c. Membrane Penetrations: Membrane penetrations by boxes other than electrical boxes, provided such penetrating items and the annular space between the wall membrane and the box, are protected by an approved membrane penetration firestopping shall have an F and T rating of not less than the required fire-resistance rating of the wall penetrated and shall be installed in accordance with their listing.

2.04 MATERIALS

- A. Provide all materials required to comply with approved firestopping systems.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.

3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
- C. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.
- D. Identification: Identify through-penetration firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. Include the following information on labels:
1. The words "Warning - Through-Penetration Firestop System- Do Not Disturb. Notify Building Management of Any Damage."
 2. Through-penetration firestop system designation of applicable testing and inspecting agency.
 3. Date of installation.
 4. Through-penetration firestop system manufacturer's name.
 5. Installer's name.

3.04 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.05 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

**SECTION 07 92 00
JOINT SEALANTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 25 00 - Weather Barriers: Sealants required in conjunction with water-resistive barriers.
- B. Section 08 80 00 - Glazing: Glazing sealants and accessories.
- C. Section 09 21 16 - Gypsum Board Assemblies: Sealing acoustical and sound-rated walls and ceilings.

1.03 REFERENCE STANDARDS

- A. ASTM C794 - Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants 2018 (Reapproved 2022).
- B. ASTM C834 - Standard Specification for Latex Sealants 2017 (Reapproved 2023).
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- D. ASTM C1087 - Standard Test Method for Determining Compatibility of Liquid-Applied Sealants with Accessories Used in Structural Glazing Systems 2023.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.
- F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants 2022.
- G. ASTM C1311 - Standard Specification for Solvent Release Sealants 2022.

1.04 SUBMITTALS

- A. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes 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. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
 - 4. Substrates the product should not be used on.
- B. 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.
- C. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
- D. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.
- E. 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.

1.05 QUALITY ASSURANCE

- A. 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. Allow sufficient time for testing to avoid delaying the work.
4. Deliver to manufacturer sufficient samples for testing.
5. Report manufacturer's recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
6. 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.

1.06 WARRANTY

- A. Special Installer's Warranty: Contractor's standard letterhead form in which Installer agrees to repair or replace joint sealants and accessories that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Correct defective work within a five year period after Date of Substantial Completion.
- B. Special Installer's Warranty: Contractor's standard letterhead form in which Installer agrees to repair or replace joint sealants and accessories that do not comply with performance and other requirements specified in this Section within specified warranty period.
 1. Warranty Period: Five years from date of Substantial Completion unless longer duration is noted for individual sealant systems.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

- A. Scope:
 1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to, the following items.
 - a. Wall expansion and control joints.
 - b. Joints between door, window, and other frames and adjacent construction.
 - c. Joints between different exposed materials.
 - d. Openings below ledge angles in masonry.
 - e. Other joints indicated below.
 2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
 - a. Joints between door, window, and other frames and adjacent construction.
 - b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
 - 1) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
 - c. Other joints indicated below.
 3. Do not seal the following types of joints.
 - a. Intentional weepholes in masonry.
 - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
 - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
 - d. Joints where installation of sealant is specified in another section.
 - e. Joints between suspended panel ceilings/grid and walls.
- B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
- C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
 1. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
- D. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".

2.02 JOINT SEALANTS - GENERAL

2.03 NONSAG JOINT SEALANTS

- A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
 - 1. Movement Capability: Plus and minus 50 percent, minimum.
 - 2. Non-Staining to Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.
 - 3. Color: Match adjacent finished surfaces.
 - 4. Products:
 - a. Dow; Dowsil 791/795 Silicone Sealant: www.dow.com.
 - b. Sika Corporation; Sikasil WS-290/WS-295; www.usa.sika.com.
 - c. Tremco Commercial Sealants & Waterproofing; Spectrem 1/Spectrem 2/Spectrem3.
 - d. Substitutions: See Section 01 25 00 - Substitution Procedures.
 - 5. Applications:
 - a. Exterior joints unless otherwise indicated, including, but not limited to, the following:
 - b. Exterior vertical and horizontal nontraffic joints in cast-in-place concrete.
 - c. Exterior vertical and horizontal nontraffic joints between plant-precast architectural concrete units.
 - d. Exterior vertical control and expansion joints in unit masonry.
 - e. Exterior horizontal pressure-relieving joints in unit masonry.
 - f. Exterior joints between flashing materials and unit masonry.
 - g. Exterior perimeter joints between different materials listed above.
- B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
 - 1. Color: White.
 - 2. Products:
 - a. Dow, Dowsil 786 Silicone Sealant.
 - b. Pecora Corporation; Pecora 898 NST (Non-Staining Technology): www.pecora.com/#sle.
 - c. Sika Corporation; Sikasil GP: www.usa.sika.com/#sle.
 - d. Tremco, Tremsil 200: www.tremcosealants.com.
 - e. Substitutions: See Section 01 25 00 - Substitutions Procedures.
 - 3. Applications:
 - a. Interior joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Joints between counters and adjoining walls and floors at bathrooms, kitchens and other wet areas.
- C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
 - 1. Color: Match adjacent finished surfaces.
 - 2. Products:
 - a. Pecora Corporation; DynaTrol II: www.pecora.com/#sle.
 - b. Sika Corporation; Sikaflex-1a/Sikaflex-2c: www.usa.sika.com/#sle.
 - c. Tremco Commercial Sealants & Waterproofing; Vulkem 116/Dymerc 240: www.tremcosealants.com/#sle.
 - d. Substitutions: See Section 01 25 00 - Substitution Procedures.
 - 3. Applications:
 - a. Vertical joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
 - b. Interior perimeter joints of exterior openings.
 - c. Joints between top of non-load bearing unit masonry walls and underside of cast-in-place concrete slabs and beams.
- D. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.

1. Color: To be selected by Architect from manufacturer's full range.
 2. Products:
 - a. Pecora Corporation; AC-20 +Silicone: www.pecora.com/#sle.
 - b. Sherwin-Williams Company; 950A Siliconized Acrylic Latex Caulk: www.sherwin-williams.com/#sle.
 - c. Tremco Commercial Sealants & Waterproofing; Tremflex 834: www.tremcosealants.com/#sle.
 - d. Substitutions: See Section 01 25 00 - Substitutions Procedures.
 3. Applications:
 - a. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
- E. Butyl Sealant: Solvent-based; ASTM C1311; single component, nonsag; not expected to withstand continuous water immersion or traffic.
1. Color: To be selected by Architect from manufacturer's standard range.
 2. Products:
 - a. Pecora Corporation; Pecora BC-158 Butyl Rubber Sealant: www.pecora.com/#sle.
 - b. Sherwin-Williams Company; Storm Blaster All Season Sealant: www.sherwin-williams.com/#sle.
 - c. Substitutions: See Section 01 25 00 - Substitution Procedures.
 3. Applications:
 - a. Lap Joints in Sheet Metal Fabrications.
 - b. Metal Panel Jambs Between Closure Trim at End of Panels and Jamb Trim Extending to Windows.

2.04 SELF-LEVELING SEALANTS

- A. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multi-component; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
1. Movement Capability: Plus and minus 25 percent, minimum.
 2. Color: To be selected by Architect from manufacturer's full range.
 3. Products:
 - a. Pecora Corporation, Urexpan NR-200: www.pecora.com/#sle.
 - b. Sika Corporation; Sikaflex-1c SL: www.usa.sika.com/#sle.
 - c. Tremco, THC-900/THC-901; www.tremcosealants.com.
 - d. Substitutions: See Section 01 25 00 - Substitution Procedures.
 4. Applications:
 - a. Exterior horizontal nontraffic and traffic isolation and contraction joints in cast-in-place concrete slabs.
 - b. Interior expansion, control, contraction, and isolation joints in horizontal traffic surfaces in concrete, ceramic tile, dimension stone, dimension stone tile and brick, unless otherwise specified in individual specification sections.
- B. Refer to Civil drawings for additional exterior paving sealant systems.

2.05 ACCESSORIES

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
1. Closed Cell and Bi-Cellular: 25 to 33 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

- D. Joint Cleaner: Non-corrosive and non-staining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- E. Primers: Type recommended by sealant manufacturer to suit application; non-staining.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

3.02 PREPARATION

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
 - 1. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include, but are not limited to, the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - 2. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include, but are not limited to, the following:
 - a. Metal.
 - b. Porcelain enamel.
 - c. Glazed surfaces of ceramic tile.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Precast Architectural Concrete Panel Joints: Install two-stage sealant joints and expansion joints in accordance with PCI Architectural Precast Concrete Design Manual, Section 4.7 and as detailed on drawings.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- E. Install bond breaker backing tape where backer rod cannot be used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- G. 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, unless manufacturer's approval is obtained and instructions are followed.
- H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

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. Hollow metal borrowed lites glazing frames.

1.02 RELATED REQUIREMENTS

- A. Section 08 71 00 - Door Hardware.

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.
- C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2017.
- D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2020.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- F. 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 2021a.
- G. 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 2018a.
- H. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.
- I. ASTM C476 - Standard Specification for Grout for Masonry 2023.
- J. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames 2016.
- K. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.
- L. ITS (DIR) - Directory of Listed Products Current Edition.
- M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames 2002.
- N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames 2011.
- O. NAAMM HMMA 840 - Guide Specifications For Receipt, Storage and Installation of Hollow Metal Doors and Frames 2017.
- P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames 2014.
- Q. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2022.
- R. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2022.
- S. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames 2023.
- T. UL (DIR) - Online Certifications Directory Current Edition.
- U. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. 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.
- B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

1.05 QUALITY ASSURANCE

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL 10C.
- B. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptance to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9. Label each individual glazed lite.
- C. Smoke-Control Door Assemblies: Comply with NFPA 105 or UL 1784.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

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. Steelcraft, an Allegion brand: www.allegion.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

- A. Requirements for Hollow Metal Doors and Frames:
 - 1. Steel Sheet: Comply with one or more of the following requirements; galvanized 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: Manufacturers 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 (galvanized) 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.
- B. 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. Exterior Doors: Thermally insulated.
 - 1. Grade: ANSI A250.8 Level 4, physical performance Level A, Model 2, seamless (continuously welded with seams dressed smooth).
 - 2. Core Material: Mineral fiberboard insulation with 22-gauge vertical steel stiffener ribs, welded at both ends.
 - 3. Top Closures: Inverted steel channel closure, installed flush, filled and finished smooth
 - 4. Door edges shall be fabricated using beveled edges on hinge and lock sides.
 - 5. All door seams shall have 1-inch welds every 6-inches on center, ground and finished smooth.
 - 6. Insulating Value: R-value of not less than 6.0 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.
 - 7. Weatherstripping: Refer to Section 08 71 00.
 - 8. Door Finish: Factory primed for field finishing.
- B. Interior Doors, Non-Fire Rated:
 - 1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 2, seamless.
 - 2. Core Material: Sound insulation core with 22-gauge vertical steel stiffener ribs, welded at both ends.
 - 3. Door Thickness: 1-3/4 inches, nominal.
 - 4. Door Finish: Factory primed for field finishing.
- C. Fire-Rated Doors:
 - 1. Grade: ANSI A250.8 Level 3, physical performance Level A, Model 2, seamless.
 - 2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
 - a. Provide units listed and labeled by UL (DIR) or ITS (DIR).
 - b. Attach fire rating label to each fire rated unit.
 - 3. Core Material: As required to provide fire-protection ratings indicated with 22-gauge vertical steel stiffener ribs, welded at both ends.
 - 4. Door Finish: Factory primed for field finishing.

2.04 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Exterior Door Frames: Full profile/continuously welded type. "Timely" and "Redi-frames" are prohibited.
 - 1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A60/ZF180 coating.
 - 2. Frame Metal Thickness: 14 gage, 0.067 inch, minimum.
 - 3. Weatherstripping: Integral, recessed into door edge or frame.
- C. Interior Door Frames, Non-Fire Rated: Fully welded type. "Timely" and "Redi-frames" are prohibited.
 - 1. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- D. Door Frames, Fire-Rated: Fully welded type. "Timely" and "Redi-frames" are prohibited.
 - 1. Fire Rating: Same as door, labeled.
 - 2. Frame Metal Thickness: 16 gage, 0.053 inch, minimum.
- E. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.
- F. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

- G. Provide 6" styrofoam block with same profile as frame so as not to allow grout in the bottom 6" of frame.
- H. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.
- I. Frame corner joints shall be mitered, interlocked, welded and ground smooth.
- J. Doors shall be template reinforced for hardware 7 ga. on hinges, 12 ga. everywhere else.

2.05 FINISHES

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
- B. Automotive Undercoating: Provide a field applied, non-flammable, low-VOC automotive undercoat layer to the inside of all frames that will be in contact with anti-freezing agents in plaster or mortar.

2.06 ACCESSORIES

- A. Glazing: As specified in Section 08 80 00, factory installed.
- B. 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.
 - 1. Provide 6 inch polystyrene rigid insulation fillers cut to frame profile installed in bottoms of frames to keep grout out of bottom 6 inches of frame.
- C. Sound Batt Insulation for Frames: At all interior frames in metal framed walls, provide acoustic batt insulation as specified in Section 09 21 16.
- D. 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.
- E. Ceiling Struts: Minimum 1/4 inch thick by 1 inch wide steel.
- F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.
- G. Jamb Anchors:
 - 1. Masonry Type: Adjustable strap-and stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
 - 2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
 - 3. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8 inch diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.
- H. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.07 STOPS AND MOLDINGS

- A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, same material as door face sheet.
- B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated.
- C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, same material as frames.

2.08 FABRICATION

- A. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.
- B. Hollow Metal Doors:

1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors. Seal joints in top edges of doors against water penetration.
 2. Glazed Lites: Factory cut openings in door.
 3. Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated.
 4. Steel-Stiffened Door Cores: Provide minimum thickness 0.026 inch, steel vertical stiffeners of same material as face sheets extending full-door height, with vertical webs spaced not more than 6 inches apart. Spot weld to face sheets no more than 5 inches o.c. Fill spaces between stiffeners with glass- or mineral-fiber insulation.
- C. Hollow Metal Frames: Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
1. Welded Frames: Weld flush face joints continuously; grind, fill, dress and make smooth, flush, and invisible.
 2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
 3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 6. Jamb Anchors: Provide number and spacing of anchor as follows:
 - a. Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
 - 1) Two anchors per jamb up to 60 inches high.
 - 2) Three anchors per jamb from 60 to 90 inches high.
 - 3) Four anchors per jamb from 90 to 96 inches high.
 - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
 7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers.
 - a. Single-Door Frames: Three door silencers.
 - b. Double-Door Frames: Two door silencers.
- D. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware".
1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
 2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
 3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
 4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 electrical sections.
- E. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
 2. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
 3. Provide loose stops and moldings on inside of hollow metal work.
 4. Coordinate rabbet width between fixed and removeable stops with type of glazing and type of installation indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction.
- D. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
- E. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
- F. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
- G. Metal-Stud Partitions: Solidly pack batt insulation behind frames.
- H. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
- I. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
- J. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
- K. Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.
 - 1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.
- L. Coordinate installation of hardware.

3.03 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
- B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.04 ADJUSTING

- A. Adjust for smooth and balanced door movement.
- B. Prime Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- C. Metallic-Coated Surfaces: Clean abraded areas and repair with glavanizing repair paint according to manufacturer's written instructions.

END OF SECTION

**SECTION 08 14 16
FLUSH WOOD DOORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Flush wood doors; flush and flush glazed configuration; fire-rated, non-rated, and acoustical.

1.02 RELATED REQUIREMENTS

- A. Section 08 11 13 - Hollow Metal Doors and Frames.
- B. Section 08 71 00 - Door Hardware.
- C. Section 08 80 00 - Glazing.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- B. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2022.
- C. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- B. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
- C. Samples: Submit two samples of door construction, 12 by 12 inch in size cut from top corner of door.
- D. Manufacturer's Installation Instructions: Indicate special installation instructions.
- E. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

- A. Quality Standard: In addition to requirements specified, comply with AWI's "Architectural Woodwork Quality Standards Illustrated."

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging, and inspect for damage.
- C. Protect doors with resilient packaging; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.07 WARRANTY

- A. Interior Doors: Provide manufacturer's warranty for the life of the installation.
- B. Include coverage for 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. Masonite Architectural: www.architectural.masonite.com.
 - 2. VT Industries, Inc: www.vtindustries.com/#sle.
 - 3. Substitutions: See Section 01 25 00 - Submittal Procedures.
- B. Sound-Rated Wood Doors:

1. Masonite Architectural; Acoustically-Rated Door Solutions:
www.architectural.masonite.com/#sle.

2.02 DOORS

- A. Doors:
 1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
 2. Wood Veneer Faced Doors: 5-ply or 7-ply unless otherwise indicated.
- B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
 1. Provide solid core doors at each location.
 2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.

2.03 DOOR AND PANEL CORES

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type structural composite lumber core (SCLC), plies and faces as indicated.
- B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as indicated below:
 1. Blocking: Provide composite blocking with improved screw-holding capability approved for use in door of fire-protection ratings indicated:
 - a. 5 inch top rail blocking.
 - b. 5 inch bottom rail blocking, in doors indicated to have protection plates.
 - c. 5 inch midrail blocking, in doors indicated to have armor plates or exit devices.
 2. Edge Construction: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
- C. Sound-Rated Doors: Where indicated in the door schedule on Drawings provide STC 45 (and additional STC ratings as noted) doors supplied with seals and gaskets tested by manufacturer.

2.04 DOOR FACINGS

- A. Veneer Facing for Transparent Finish: See drawings for interior Finish Specs for species and cut, HPVA Grade A, with with slip match between leaves of veneer, balance 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 10 feet of each other when doors are closed.
- B. Veneer Facing for Opaque Finish: Medium density overlay (MDO), in compliance with indicated quality standard.
- C. Facing Adhesive: Type I - waterproof.

2.05 DOOR CONSTRUCTION

- A. Fabricate doors in accordance with door quality standard specified.
- B. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- C. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
 1. Exception: Doors to be field finished.
- D. 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), Section 5 - Finishing for grade specified and as follows:

1. Transparent:
 - a. System - 5, Varnish, Conversion.
 - b. Sheen: Flat.
 2. Opaque:
 - a. System - 5, Varnish, Conversion.
 - b. Color: As selected by Architect.
 - c. Sheen: Flat.
- B. Factory finish doors in accordance with approved sample.
- C. Seal door top and bottom edges with color sealer to match door facing.

2.07 ACCESSORIES

- A. Hollow Metal Door Frames: See Section 08 11 13.
- B. Glazing: See Section 08 80 00.
- C. Glazing Stops: Wood, of same species as door facing, mitered corners; prepared for countersink style tamper proof screws.
- D. Door Hardware: See Section 08 71 00.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
 1. Install fire-rated doors in accordance with NFPA 80 requirements.
- B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.
- E. Align in frames for uniform clearances at each edge.
- F. Coordinate installation of glazing.

3.03 TOLERANCES

- A. Comply with specified quality standard for fit and clearance tolerances.
- B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

- A. Adjust doors for smooth and balanced door movement.
- B. Adjust closers for full closure.

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 units.

1.02 SUBMITTALS

- A. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
- B. Shop Drawings: Indicate exact position of each access door and/or panel unit.
- C. Manufacturer's Installation Instructions: Indicate installation requirements.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

2.02 WALL- AND CEILING-MOUNTED ACCESS UNITS

- A. Manufacturers:
 - 1. Activar Construction Products Group, Inc. - JL Industries: www.activarcpg.com.
 - a. Wall and Ceiling Access Panel: Activar/JL Industries TMP Series.
 - 2. ACUDOR Products Inc: www.acudor.com/#sle.
 - a. Wall- and Ceiling-Mounted Units: ACUDOR DW-5040.
 - 3. Babcock-Davis: www.babcockdavis.com.
 - a. Wall- and Ceiling-Mounted Units: Architectural Access Door BNW.
- B. Wall- and Ceiling-Mounted Units: Factory-fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
 - 1. Material: Steel.
 - 2. Style: Recessed door panel for infill with wall/ceiling finish.
 - a. Gypsum Board Mounting Criteria: Use drywall bead type frame.
 - 3. Door Style: Single thickness with rolled or turned in edges.
 - 4. Door Size: 24" x 24".
 - 5. Frames: 16 gauge, 0.0598 inch, minimum thickness.
 - 6. Steel Sheet Door Panels: 16 gauge, 0.059 inch.
 - 7. Steel Finish: Galvanized.
 - 8. Hardware:
 - a. Hinges for Non-Fire-Rated Units: Continuous piano hinge.
 - b. Latch/Lock: Screw driver slot for quarter turn cam latch.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

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**SECTION 08 33 23
OVERHEAD COILING DOORS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Overhead coiling doors, operating hardware, non-fire-rated, electric operation.
- B. Wiring from electric circuit disconnect to operator to control station.

1.02 RELATED REQUIREMENTS

- A. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
- B. Division 26 sections for conduit and wiring.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- C. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. Product Data: Provide general construction, electrical equipment, and component connections and details.
- B. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.
- C. Samples: Submit two samples of each finish, each with two attached slats, 12" in length, illustrating, shape, and finish.
- D. Manufacturer's Installation Instructions: Indicate installation sequence and procedures, adjustment and alignment procedures.
- E. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for both installation and maintenance of units required for this Project.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Overhead Coiling Doors:
 - 1. Cornell Iron Works, Inc: www.cornelliron.com.
 - 2. The Cookson Company: www.cooksondoor.com.
 - 3. McKeon Rolling Steel Door Company.
 - 4. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.02 COILING DOORS

- A. Non-Fire-Rated Interior Coiling Doors: Steel slat curtain.
 - 1. Single thickness slats.
 - 2. Nominal Slat Size: 2 inches wide x required length.
 - 3. Finish: Factory painted, color as selected by Architect.
 - 4. Guides: Angles, finished to match door.
 - 5. Hood Enclosure: As indicated on drawings; primed steel, painted to match door.
 - 6. Electric operation. Provide on-off key switch to control power to three button control station. When key switch is in on position, button control station is operational. When key is switched to off position, button control station is not operational and door stays in

current position.

7. Mounting: Surface mounted.

2.03 MATERIALS AND COMPONENTS

- A. Curtain Construction: Interlocking slats.
 1. Slat Ends: Each slat fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
 2. Curtain Bottom: Fitted with angles to provide reinforcement and positive contact in closed position.
 3. Steel Slats: Minimum thickness, 22 gauge, 0.0299 inch; ASTM A653/A653M galvanized steel sheet.
- B. Guide Construction: Continuous, of profile to retain door in place with snap-on trim, mounting brackets of same metal.
- C. Guides: ASTM A 36/A 36M steel angles, 3/16 inch thick, size as indicated, factory finished to match door.
- D. Hood Enclosure and Trim: Match finish of door. Internally reinforced to maintain rigidity and shape.
- E. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

2.04 FINISH

- A. Door Finish:
 1. Doors: Manufacturer's Baked-Enamel or Powder-Coated Finish.
 - a. Color: To be selected by Architect.

2.05 ELECTRIC OPERATION

- A. Electric Motor Operator: Operator shall be equipped with an adjustable screw-type limit switch to break the circuit at termination of travel. High efficiency planetary gearing running in an oil bath, shall be furnished together with a centrifugal governor, magnetic operated brake and a fail-safe magnetic release device, completely housed to protect against damage, dust and moisture. An efficient overload protection device, which will break the power circuit and protect against damage to the motor windings shall be integral with the unit. Operator is to be housed in a NEMA type 1 enclosure.
 1. Motor: Shall be intermediate duty, thermally protected, ball bearing type with a class A or better insulation. Horsepower of motor is to be 1/3hp minimum or of manufacturer's recommended size, whichever is greater.
 2. Starter: Shall be size "0" magnetic reversing starter, across the line type with mechanical and electrical interlocks, with 10 amp continuous rating and 24 volt control circuit.
 3. Reducer: Planetary gear type, 80% efficiency minimum.
 4. Brake: Magnetically activated, integral within the operator's housing.
- B. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
 1. 24 volt circuit.
 2. Recess mounted, as indicated on drawings.
 3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
 - a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
 4. Provide key-switch to control power to three button control station.
 5. Additionally, provide option to link the control of multiple doors to a single control system.

- C. Safety Edge: Located at bottom of coiling door, full width, electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object, hollow neoprene covered.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
- D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service with Division 26 sections.
- F. Complete wiring from disconnect to unit components.
- G. Install enclosure and perimeter trim.

3.02 ADJUSTING

- A. Adjust operating assemblies for smooth and noiseless operation.

3.03 CLEANING

- A. Clean installed components.
- B. Remove labels and visible markings.

3.04 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel (no less than 2 hours) to adjust, operate, and maintain overhead coiling doors.

END OF SECTION

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**SECTION 08 43 13
ALUMINUM-FRAMED STOREFRONTS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aluminum-framed storefront, with vision glass.
- B. Aluminum doors and frames.

1.02 RELATED REQUIREMENTS

- A. Section 08 80 00 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site 2015.
- B. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems 2015.
- C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document) 2015.
- D. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2020.
- 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 E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2004 (Reapproved 2012).
- H. 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).
- I. 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).

1.04 SUBMITTALS

- A. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details.
- B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required. Include plans, elevations, sections, details, attachments to other work, embedment type, size and layout.
 - 1. Provide water control diagrams for condensation and infiltration evacuation.
 - 2. Include structural analysis data signed and sealed by the professional engineer, licensed in the State in which the project is located, responsible for their preparation.
- C. Samples: Submit two samples 2x3 inches in size illustrating finished aluminum surface, glass, glazing materials.

1.05 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.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.08 WARRANTY

- A. Standard Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of aluminum-framed systems that do not comply with requirements or that deteriorate as defined in this Section within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Noise or vibration caused by thermal movements.
 - c. Deterioration of metals and other materials beyond normal weathering.
 - d. Water leakage through fixed glazing and framing areas.
 - e. Failure of operating components to function properly.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design:
 - 1. Exterior Storefront System: Kawneer, Trifab VG 451T.
 - 2. Interior Storefront System, Kawneer, Trifab VG 451.
- B. Other Acceptable - Aluminum-Framed Storefronts Manufacturers:
 - 1. EFCO Corporation: www.efcocorp.com/sle.
 - 2. Kawneer North America: www.kawneer.com/#sle.
 - 3. Oldcastle BuildingEnvelope: www.oldcastlebe.com/#sle.
 - 4. Pittco Architectural Metals Inc: www.pittcometals.com/#sle.
 - 5. Tubelite, Inc: www.tubeliteinc.com/#sle.
 - 6. YKK AP America Inc.: www.ykkap.com.

2.02 ALUMINUM-FRAMED STOREFRONT

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
 - 1. Finish: Class I natural anodized.
 - a. Factory finish all surfaces that will be exposed in completed assemblies. Factory finish all surfaces
 - 2. 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.
 - 3. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
 - 4. 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.
 - 5. 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.
 - 6. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.

7. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
- B. Performance Requirements:
 1. General: Provide aluminum-framed systems, including anchorage, capable of withstanding, without failure, the effects of the following:
 - a. Structural loads.
 - b. Thermal movements.
 - c. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 - d. Dimensional tolerances of building frame and other adjacent construction.
 - e. Failure includes the following:
 - 1) Deflection exceeding specified limits.
 - 2) Thermal stresses transferred to building structure.
 - 3) Framing members transferring stresses, including those caused by thermal and structural movements, to glazing.
 - 4) Noise or vibration created by wind and thermal and structural movements.
 - 5) Loosening or weakening of fasteners, attachments, and other components.
 - 6) Sealant failure.
 - 7) Failure of operating units to function properly.
 2. Structural Loads:
 - a. Wind Loads: As indicated on Structural Drawings.
 - b. Seismic Loads: As indicated on Structural Drawings.
 3. Deflection of Framing Members Normal to Wall Plane: Limited to 1/175 of clear span for spans up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
 4. Structural-Test Performance: Systems tested according to ASTM E 330 as follows:
 - a. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits.
 - b. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
 - c. Test Durations: As required by design wind velocity but not less than 10 seconds.
 5. 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. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
 6. 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.
 7. Air Leakage Laboratory Test: Maximum of 0.06 cu ft/min sq ft of wall area, when tested in accordance with ASTM E283 at 6.27 psf pressure differential across assembly.

2.03 COMPONENTS

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
 1. Framing members for interior applications need not be thermally broken.
 2. Cross-Section: As indicated on drawings.
- B. Glazing: As specified in Section 08 80 00.
- C. Outswing Casement Windows:
 1. Basis-of-Design: Kawneer, GlassVent Outswing Casement Windows.
 2. Substitutions: See Section 01 25 00 – Substitution Procedures.
 3. Performance:

- a. Performance Requirements: Provide aluminum windows of performance indicated that comply with AAMA/WDMA/CSA 101/I.S.2/A440 (NAFS).
 - 1) Performance Class and Grade: AW-PG90-AP/AW-PG90-C
- b. Air Infiltration: The test specimen shall be tested in accordance with ASTM E283 at a minimum size of 36" x 60". Air infiltration rate shall not exceed 0.10 cfm/ft² at a static air pressure differential of 6.24 psf.
- c. Water Resistance: The test specimen shall be tested in accordance with ASTM E547 and ASTM E331 at a minimum size of 36" x 60" Casement Outswing. There shall be no leakage as defined in the test method at a static air pressure differential of 15 psf.
- d. Uniform Load Deflection: A minimum static air pressure difference of 90 psf shall be applied in the positive and negative direction in accordance with ASTM E330. There shall be no deflection in excess of L/175 of the span of any framing member.
- e. Uniform Load Structural: A minimum static air pressure difference of 135 psf shall be applied in the positive and negative direction in accordance with ASTM E330. The unit shall be evaluated after each load with permanent set not to exceed 0.2% of span length.
- f. Component Testing: Window components shall be tested in accordance with procedures described in AAMA/WDMA/CSA 101/I.S.2/A440 and AAMA 910.
- g. Energy Efficiency:
 - 1) Thermal testing per AAMA 1503 within 1600 Wall System 1, at the prescribed 59" x 24" test size glazed using a single lite of 1" insulating glass composed of 1/4" clear low-E .035 #2, 1/2" air space with warm edge spacer, 1/4" clear with the following results:
 - (a) Condensation Resistance Factor: Minimum (51 frame) and (63 glass) CRF.
 - (b) Thermal Transmittance: Maximum 0.72 BTU/hr/ft²/°F U-value
4. Hardware:
 - a. 4-Bar Hinges
 - b. Cam Locking Handles.

2.04 MATERIALS

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Fasteners: Stainless steel.
- C. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.

2.05 FINISHES

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Install wall system in accordance with manufacturer's 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. Install anti-walking clips in openings that are more than three frames wide per manufacturers instructions.
- I. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration.
- J. Coordinate attachment and seal of perimeter air and vapor barrier materials.
- K. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- L. Metal Protection:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape or installing nonconductive spacers as recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
 - 3. If necessary protect the exterior framing during masonry wash down.
- M. Install glass in accordance with Section 08 80 00, using glazing method required to achieve performance criteria.
- N. Entrances: Install to produce smooth operation and tight fit at contact points.
 - 1. Exterior Entrances: Install to produce tight fit at weather stripping and weathertight closure.
 - 2. Field-Installed Hardware: Install surface-mounted hardware according to hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.
- O. Door Hardware: Install door hardware specified in Division 8 Section "Door Hardware."
- P. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 FIELD QUALITY CONTROL

- A. Before installation of interior finishes, test a minimum of 25 feet by 1 story of installed storefront for water leakage in accordance with AAMA 501.2 hose test. Tested area shall show no evidence of water penetration.
- B. Repair or remove work where test results and inspections indicate that it does not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.05 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

END OF SECTION

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**SECTION 08 56 19
INTERIOR SLIDING PASS WINDOWS**

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes:
 - 1. Frameless interior pass-thru sliding service windows.

1.02 RELATED REQUIREMENTS

- A. Section 12 36 00 – Countertops.
- B. Section 08 80 00 – Glazing.

1.03 SUBMITTALS

- A. Shop Drawings: Submit for fabrication and installation of windows. Include details, elevations and installation requirement of finish hardware.
- B. Product Data: Submit Manufacturer's technical product data, cleaning instructions, and installation instructions.
- C. Samples: Exposed finishes. 4" piece of each color.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver windows crated to provide protection during transit and job storage.
- B. Inspect windows upon delivery for damage. Unless minor defects can be made to meet the Architect's specifications and satisfaction, damaged parts should be removed and replaced.
- C. Store windows at building site under cover in dry location.
- D. Protect products from damage during handling and construction operations.

PART 2 – PRODUCTS

2.01 PRODUCTS GENERAL

- A. Basis of design: CR Laurence, Sharyn Series Frameless Interior Pass-Thru Window.
 - 1. Substitutions: See Section 01 25 00 – Substitution Procedures.

2.02 MATERIALS

- A. Header: Shall be constructed of 6063-T5 extruded aluminum. Window rolls on top-hung ball bearing rollers. Overall size is to be as indicated on drawings.
- B. Finish: Satin anodized.
- C. Glazing: See Section 08 80 00 - Glazing.
- D. Accessories: Keyed lock, recessed bottom track.
- E. Sliding panel configuration as indicated on drawings.

2.03 PASS WINDOWS

- A. Pass Window Units: Factory fabricated, glazed unit; horizontal sliding type.
 - 1. Header: Extruded aluminum.
 - 2. Glass: Tempered safety glass as specified in Section 08 80 00 – Glazing.
 - 3. Hardware: Manufacturer's standard double track header, rollers, guides, push button lock.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Examine and verify substrate suitability for product installation.
- B. Verify rough opening is properly sized and located.
- C. Protect existing construction and completed work from damage.

- D. Apply barrier coating to aluminum surfaces in contact with dissimilar metals and cementitious materials to minimum 0.7 mm dry film thickness.

3.02 INSTALLATION

- A. Install window in accordance with manufacturer's printed instructions and recommendations. Repair damaged units as directed by Architect or replace with new units.

3.03 CLEANING

- A. Clean frame and glazing surfaces after installation, complying with requirements contained in the manufacturer's instructions. Remove excess glazing sealant compounds, dirt or other substances.

3.04 PROTECTION

- A. Institute protective measures required throughout the remainder of the construction period to ensure that all the windows do not incur any damage or deterioration, other than normal weathering, at the time of acceptance.

END OF SECTION

SECTION 08 71 00 - DOOR HARDWARE

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. Sliding doors.

- B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Automatic operators.
4. Cylinders specified for doors in other sections.

- C. Related Sections:

1. Division 08 Section "Hollow Metal Doors and Frames".
2. Division 08 Section "Flush Wood Doors".
3. Division 08 Section "Aluminum-Framed Storefronts".

- D. Codes and References: Comply with the version year 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. UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
8. 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.
 - F. 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.
- 1.4 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. Automatic Operator Supplier Qualifications: Power operator products and accessories are required to be supplied and installed through the Norton Preferred Installer (NPI) program. Suppliers are to be factory trained, certified, and a direct purchaser of the specified power operators and be responsible for the installation and maintenance of the units and accessories indicated for the Project.

- F. 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.
 - G. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.
 - H. 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.
 - I. 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
 - J. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.
- 1.5 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".

1.6 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 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.

1.7 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. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 - 1. Ten years for mortise locks and latches.
 - 2. Five years for exit hardware.
 - 3. Twenty five years for manual overhead door closer bodies.
 - 4. Five years for motorized electric latch retraction exit devices.
 - 5. Two years for electromechanical door hardware, unless noted otherwise.

1.8 MAINTENANCE SERVICE

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

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
- B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified 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 the all out-swinging lockable doors.
5. Manufacturers:
 - a. McKinney (MK).
 - b. Stanley Hardware (ST).
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 certified 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. Bommer Industries (BO).
 - b. Pemko (PE).
- C. Sliding and Folding Door Hardware: Hardware is to be of type and design as specified and should comply with ANSI/BHMA A156.14.
 1. Sliding Bi-Passing Pocket Door Hardware: Provide complete sets consisting of track, hangers, stops, bumpers, floor channel, guides, and accessories indicated.
 2. Manufacturers:
 - a. Hafele Manufacturing (HF).
 - b. 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: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
 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. Trimco (TC).
- B. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls 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. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
 5. Manufacturers:
 - a. Rockwood (RO).
 - b. Trimco (TC).

2.5 CYLINDERS AND 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.
 - 1. Manufacturers:
 - a. Medeco (MC).
 - b. Match Existing, Field Verify.
 - c. No Substitution – Facility Standard
- 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: Match Facility 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. 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. Existing System: Field verify and key cylinders to match Owner's existing system.
- E. 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).
- F. Construction Keying: Provide temporary keyed construction cores.
- G. 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 KEY CONTROL

- A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent

markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:
 - a. Lund Equipment (LU).
 - b. MMF Industries (MM).
 - c. Telkee (TK).

2.7 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Where specified, provide status indicators with highly reflective color and wording for "locked/unlocked" or "vacant/occupied" with custom wording options if required. Indicator to be located above the cylinder with the inside thumb-turn not blocking the visibility of the indicator status. Indicator window size to be a minimum of 2.1" x 0.6" with a curved design allowing a 180 degree viewing angle with protective covering to prevent tampering.
2. Manufacturers:
 - a. Sargent Manufacturing (SA) - 8200 Series.
 - b. No Substitution – Facility Standard.

B. Multi-Point Locksets: ANSI/BHMA A156.37, Certified Products Directory (CPD) listed vertical rod locking devices designed for openings requiring multiple latching points within one locking mechanism. Rods are retracted by dual mounted outside lever trim controls available in a variety of ANSI/BHMA operational functions. Option for single top latching only eliminates the need for bottom strikes.

1. Manufacturers:
 - a. Sargent Manufacturing (SA) - 7000 Series.
 - b. No Substitution – Facility Standard.

2.8 ELECTROMECHANICAL LOCKING DEVICES

A. Electromechanical Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed, subject to same compliance standards and requirements as mechanical mortise locksets, electrified locksets to be of type and design as specified below and in the hardware sets.

1. Electrified Lock Options: Where indicated in the Hardware Sets, provide electrified options including: outside door lock/unlock trim control, latchbolt and lock/unlock status monitoring, deadbolt monitoring, and request-to-exit signaling. Support end-of-line resistors contained within the lock case. Unless otherwise indicated, provide electrified locksets standard as fail secure.

2. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
3. Manufacturers:
 - a. Sargent Manufacturing (SA) - 8200 Series.
 - b. No Substitution – Facility Standard.

B. Electromechanical Multi-Point Locks: Vertical rod locking devices designed for openings requiring multiple latching points within one locking mechanism. Rods are retracted by dual mounted outside lever trim controls available in a variety of ANSI/BHMA operational functions. Option for single top latching only eliminates the need for bottom strikes. Electromechanical options include solenoid activated trim, electric latch retraction, and inside and outside lever monitoring.

1. Energy Efficient Design: Provide lock bodies which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
2. Manufacturers:
 - a. Sargent Manufacturing (SA) - 7000 Series.
 - b. No Substitution – Facility Standard.

2.9 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.

2.10 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. 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.
 2. 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.
 3. 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.
 4. 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.
 5. 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.
 6. 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.
 7. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2" wide stiles.
 8. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
 9. Rail Sizing: Provide exit device rails factory sized for proper door width application.
 10. 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 panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.
1. Manufacturers:
 - a. Sargent Manufacturing (SA) - 80 Series.
 - b. No Substitution – Facility Standard.

2.11 ELECTROMECHANICAL EXIT DEVICES

- A. Electromechanical Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed panic and fire exit hardware devices subject to same compliance standards and requirements as mechanical exit devices. Electrified exit devices to be of type and design as specified below and in the hardware sets.
1. Energy Efficient Design: Provide devices which have a holding current draw of 15mA maximum, and can operate on either 12 or 24 volts. Locks are to be field configurable for fail safe or fail secure operation.
 2. Where conventional power supplies are not sufficient, include any specific controllers required to provide the proper inrush current.
 3. Motorized Electric Latch Retraction: Devices with an electric latch retraction feature must use motors which have a maximum current draw of 600mA. Solenoid driven latch retraction is not acceptable.
 4. Manufacturers:
 - a. Sargent Manufacturing (SA) - 80 Series.
 - b. No Substitution – Facility Standard.

2.12 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 (Large Body Cast Iron): 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 body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.

1. Manufacturers:
 - a. Sargent Manufacturing (SA) - 281 Series.
 - b. No Substitution – Facility Standard.

2.13 ELECTROHYDRAULIC DOOR OPERATORS

- A. General: Provide low energy operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for compliance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation devices.
 1. Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.
- B. Standard: Certified ANSI/BHMA A156.19.
- C. Performance Requirements:
 1. Opening Force if Power Fails: Not more than 15 lbf required to release a latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
 2. Entrapment Protection: Not more than 15 lbf required to prevent stopped door from closing or opening.
- D. Configuration: Surface mounted or in-ground as required. Door operators to control single swinging and pair of swinging doors.
- E. Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19. When not in automatic mode, door operator to function as manual door closer with fully adjustable opening and closing forces, with or without electrical power.
- F. Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.
- G. Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.
- H. Brackets and Reinforcements: Manufacturer's standard, fabricated from aluminum with nonferrous shims for aligning system components.
- I. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Norton Rixson (NO) - 6000 Series.
2. Horton (HO) – 4000 Series.

2.14 ARCHITECTURAL TRIM

A. Door Protective Trim

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
 - a. Stainless Steel: 300 grade, 050-inch thick.
5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:
 - a. Rockwood (RO).
 - b. Trimco (TC).

2.15 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified 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. Trimco (TC).
- C. 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 (RF).
 - b. Sargent Manufacturing (SA).

2.16 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 NPFA 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. Reese Enterprises, Inc. (RE).

2.17 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. Security Door Controls (SD) - DPS Series.
- b. Securitron (SU) - DPS Series.

2.18 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.

2.19 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. 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.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. 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 handling 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.
- 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

- B. Manufacturer's Abbreviations:

- 1. MK - McKinney
- 2. PE - Pemko
- 3. SU - Securitron
- 4. RO - Rockwood
- 5. SA - SARGENT
- 6. MC - Medeco
- 7. HS - HES
- 8. RF - Rixson
- 9. NO - Norton

- 10. OT - Other
- 11. CR - Curries (Hardware Only)
- 12. AK - Alarm Controls

Hardware Sets

Set: 1.0

Doors: 100.2

1 Continuous Hinge	KDFM83-HD1 PT x Height Required		PE
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Rim Exit Device, Storeroom	LC 53 55 56 AD8504 Less Pull	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Pull	RM2240-24 Mtg-Type 12XHD	10BE	RO
1 Conc Overhead Stop	1-x36	613E	RF
1 Automatic Opener	6061	690	NO
1 Threshold	253x3DFG		PE
1 Gasketing	Provided by Alum. Door Supplier		OT
1 Sweep	3452DNB TKSP8		PE
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Exit Device)		MK
1 Position Switch	DPS-M / W		SU
1 Actuator, Wall Mount	505		NO
1 Card Reader	Provided by Security Contractor		OT
1 Actuator, Mullion Mount	503		NO
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secured.
Entry by pull when door electrically dogged open as programmed by access control system, valid card read or key override.
Entry by actuator as programmed by access control system.
Free egress at all times.

Set: 2.0

Doors: 100.1

1 Continuous Hinge	KDFM83-HD1 PT x Height Required		PE
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Rim Exit Device, Exit Only	53 55 56 AD8510 EO	US10BE	SA
1 Pull	RM2240-24 Mtg-Type 12XHD	10BE	RO

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1 Conc Overhead Stop	1-x36	613E	RF
1 Surface Closer	281 P10	EB	SA
1 Drop Plate	281D	EB	SA
1 Blade Stop Spacer	581-2	EB	SA
1 Threshold	253x3DFG		PE
1 Gasketing	Provided by Alum. Door Supplier		OT
1 Sweep	3452DNB TKSP8		PE
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Exit Device)		MK
1 Position Switch	DPS-M / W		SU
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secured.
Entry by pull when door electrically dogged open by access control system.
Free egress at all times.

Set: 3.0

Doors: 100.4

1 Continuous Hinge	KDFM83-HD1 x Height Required		PE
1 Dummy Push Bar	8893	US10BE	SA
1 Pull	RM2240-24 Mtg-Type 12XHD	10BE	RO
1 Conc Overhead Stop	1-x36	613E	RF
1 Automatic Opener	6061	690	NO
1 Actuator, Wall Mount	505		NO
1 Actuator, Mullion Mount	503		NO

Set: 4.0

Doors: 100.3

1 Continuous Hinge	KDFM83-HD1 x Height Required		PE
1 Dummy Push Bar	8893	US10BE	SA
1 Pull	RM2240-24 Mtg-Type 12XHD	10BE	RO
1 Conc Overhead Stop	1-x36	613E	RF
1 Surface Closer	281 P10	EB	SA
1 Drop Plate	281D	EB	SA
1 Blade Stop Spacer	581-2	EB	SA

Set: 5.0

Doors: 150A.2

1 Continuous Hinge	DFM83HD1 PT x Height Required		PE
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1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surf Overhead Stop	9-x36	613E	RF
1 Surface Closer	281 PD10	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Threshold	253x3DFG		PE
1 Gasketing	2891DPK TKSP8		PE
1 Rain Guard	346D TKSP8		PE
1 Sweep	3452DNB TKSP8		PE
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secured.
Entry by valid card read or key override.
Free egress at all times.

Set: 6.0

Doors: 142

2 Continuous Hinge	DFM83HD1 x Height Required		PE
2 Flush Bolt	555	10BE	RO
1 Dust Proof Strike	570	10BE	RO
1 Storeroom Lock	LC 8204 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surf Overhead Stop	9-x36	613E	RF
1 Surface Closer	281 CPS	EB	SA
2 Kick Plate	K1050 10" x 1-1/2" LDW CSK BEV	10BE	RO
1 Threshold	253x3DFG		PE
1 Gasketing	2891DPK TKSP8		PE
1 Rain Guard	346D TKSP8		PE
2 Sweep	3452DNB TKSP8		PE
2 Astragal	18041DNB TKSP8		PE

Notes: Door normally closed, latched and secured.
Entry by key override.
Free egress at all times.

Install gasketing prior to soffit mounted hardware. Do not notch gasketing for soffit mounted hardware.

Set: 7.0

Doors: 155.2

6 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
2 Surface Vert Rod Exit, Passage	NB8715 ETL	US10BE	SA
2 Surface Closer	281 CPS	EB	SA
2 Kick Plate	K1050 10" x 1-1/2" LDW CSK BEV	10BE	RO
2 Silencer	608-RKW		RO

Set: 8.0

Doors: 249

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Rim Exit Device, Passage	12 8815 ETL	US10BE	SA
1 Electromechanical Surface Closer	351 EHT-Pull	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Gasketing	S88BL		PE

Set: 9.0

Doors: 306.1, 306.2

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Rim Exit Device, Passage	8815 ETL	US10BE	SA
1 Surface Closer	281 P10	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO

Set: 10.0

Doors: 250.1

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Rim Exit Device, Storeroom	LC 55 56 8804 ETL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 P10	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK

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1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Exit Device)	MK
1 Card Reader	Provided by Security Contractor	OT
1 Power Supply	AQD1	SU

Notes: Door normally closed, latched and secured.
Entry by valid card read or key override.
Free egress at all times.

Set: 11.0

Doors: 250.2

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Storeroom Lock	LC 8204 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Electric Strike	1600-CLB	613E	HS
1 Automatic Opener	6330	690	NO
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
1 Gasketing	S88BL		PE
1 Position Switch	DPS-M / W		SU
2 Actuator, Wall Mount	505		NO
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secured.
Entry by valid card read or key override.
Entry by actuator as programmed by access control system.
Free egress at all times.

Set: 12.0

Doors: 230.2

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surf Overhead Stop	9-x36	613E	RF
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Gasketing	S88BL		PE
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK

1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)	MK
1 Position Switch	DPS-M / W	SU
1 Card Reader	Provided by Security Contractor	OT
1 Power Supply	AQD1	SU

Notes: Door normally closed, latched and secured.
Entry by valid card read or key override.
Free egress at all times.

Set: 13.0

Doors: [240.2](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Storeroom Lock	LC 8204 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Electric Strike	1600-CLB	613E	HS
1 Automatic Opener	6330	690	NO
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
1 Gasketing	S88BL		PE
1 Position Switch	DPS-M / W		SU
2 Actuator, Wall Mount	505		NO
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secured.
Entry by valid card read or key override.
Door can be left electronically unlocked as programmed by access control system.
Entry by actuator as programmed by access control system.
Free egress at all times.

Set: 14.0

Doors: [301.2](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 CPS	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK

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1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)	MK
1 Position Switch	DPS-M / W	SU
1 Card Reader	Provided by Security Contractor	OT
1 Power Supply	AQD1	SU

Notes: Door normally closed, latched and secured.
Entry by valid card read or key override.
Free egress at all times.

STC 35 RATED OPENING.

Set: 15.0

Doors: 130.1, 150.1, 150.2, 230.1, 311.1, 313, 314

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Exit Device	LC 55 8876 ETL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 P10	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Exit Device)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secure.
Entry by valid card read or key override.
Free egress at all times.

Set: 16.0

Doors: 130E.2, 210A.2, 242, 305.1, 305.3, 306A

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO

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1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secure.
Entry by valid card read or key override.
Free egress at all times.

Set: 17.0

Doors: 210.1, 220.1, 303.2, 306A.1, 306B.3

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 P10	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secure.
Entry by valid card read or key override.
Free egress at all times.

Set: 17.1

Doors: 250A

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Storeroom Lock	LC 8204 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Electric Strike	1600-CLB	613E	HS
1 Automatic Opener	6330	690	NO

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1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
1 Gasketing	S88BL		PE
1 Position Switch	DPS-M / W		SU
2 Actuator, Wall Mount	505		NO
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secured.
Entry by valid card read or key override.
Entry by actuator as programmed by access control system.
Free egress at all times.

Set: 18.0

Doors: [220.2](#), [240.1](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC 8273 LSL	US10BE	SA
2 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
2 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secure.
Entry and egress by valid card read or key override.

Set: 19.0

Doors: [245](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 O	EB	SA

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1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: STC 35 RATED OPENING.

Door normally closed, latched and secure.
Entry by valid card read or key override.
Free egress at all times.

Set: 20.0

Doors: 301.1

8 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
2 Flush Bolt	555	10BE	RO
1 Dust Proof Strike	570	10BE	RO
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surf Overhead Stop	9-x36	613E	RF
1 Surface Closer	281 CPS	EB	SA
2 Kick Plate	K1050 10" x 1-1/2" LDW CSK BEV	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
2 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: STC 35 RATED OPENING.

Door normally closed, latched and secure.
Entry by valid card read or key override.
Door can be left electrically unlocked as programmed by access control system.
Free egress at all times.

Mount closer on active leaf and overhead stop on inactive leaf.

Set: 21.0

Doors: [303.3](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Classroom Lock	LC 8237 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 CPS	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
3 Silencer	608-RKW		RO

Set: 21.1

Doors: [242A](#), [306B.2](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 CPS	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
3 Silencer	608-RKW		RO
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Door normally closed, latched and secure.
Entry by valid card read or key override.
Free egress at all times.

Set: 22.0

Doors: [240H.2](#), [306B.1](#), [306C](#), [306E](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO

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3 Silencer	608-RKW	RO
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)	MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)	MK
1 Position Switch	DPS-M / W	SU
1 Card Reader	Provided by Security Contractor	OT
1 Power Supply	AQD1	SU

Notes: Door normally closed, latched and secure.
Entry by valid card read or key override.
Free egress at all times.

Set: 23.0

Doors: [311.2](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Classroom Lock	LC 8237 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 P10	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR

Notes: STC 35 RATED OPENING.

Set: 24.0

Doors: [301.3](#), [301.4](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: STC 35 RATED OPENING.

Door normally closed, latched and secured.
Entry by valid card read or key override.
Free egress at all times.

Set: 24.1

Doors: [110.1](#), [120.1](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Fail Secure Lock	LC RX 8271 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 CPS	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: STC 44 RATED OPENING.

Door normally closed, latched and secured.
Entry by valid card read or key override.
Free egress at all times.

Set: 25.0

Doors: [144.2](#), [147](#), [247](#), [302D](#), [306A.2](#), [306D.1](#), [311E](#), [311G](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Storeroom Lock	LC 8204 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO

Set: 26.0

Doors: [232](#)

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
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1 Storeroom Lock	LC 8204 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 CPS	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
3 Silencer	608-RKW		RO

Set: 27.0

Doors: 240G

4 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK
1 Storeroom Lock	LC 8204 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surf Overhead Stop	9-x36	613E	RF
3 Silencer	608-RKW		RO

Set: 28.0

Doors: 130A, 130B, 130C, 150C, 150D, 150E, 150F, 150H, 150I, 150J, 210A.1, 220A, 220B, 220C, 220D, 220E, 220F, 230A, 230B, 230C, 240B, 240C, 240D, 240E, 240F, 250C, 250D, 250E, 250F, 250H, 250J, 250K, 250L, 250M, 250N, 311A, 311B, 311C, 311D, 311F, 312A, 312B, 312C, 312D, 312E, 313B, 313C, 313G, 313H, 314A, 314B, 314C, 314D, 314E, 314F

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Office Lock	LC 8205 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO

Set: 29.0

Doors: 150G, 313A

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Office Lock	LC 8205 LSL	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Wall Stop	400	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR

Set: 30.0

Doors: 150B, 313D

4 Hinge, Full Mortise	TA2714 4-1/2" x 4-1/2"	US10BE	MK
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1 Passage Set	8215 LSL	US10BE	SA
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO

Set: 31.0

Doors: 240H.1, 250G

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Passage Set	8215 LSL	US10BE	SA
1 Wall Stop	400	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR

Notes: STC 35 RATED OPENING.

Set: 32.0

Doors: 150A.1

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Passage Set	8215 LSL	US10BE	SA
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO

Set: 33.0

Doors: 130E.1

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Passage Set	8215 LSL	US10BE	SA
1 Surface Closer	281 CPS	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
3 Silencer	608-RKW		RO

Set: 34.0

Doors: 145, 244, 302C

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Privacy Set w/ Indicator	V21 8265 VN1L	US10BE	SA
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO
1 Coat Hook	RM801	10BE	RO

Set: 35.0

Doors: 241A

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Electric Power Transfer	EL-CEPT	613E	SU
1 Electrified Mortise Lock	LC V21 PHR NAC-82281 VN1L	US10BE	SA
1 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Surface Closer	281 O	EB	SA
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
1 Sound Seals	Provided by Sound Door Supplier		CR
1 ElectroLynx Harness	QC-C1500P (Frame - EPT to Power/Controller)		MK
1 ElectroLynx Harness	QC-CxxxP (Door - EPT to Elec. Lock)		MK
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU
1 Coat Hook	RM801	10BE	RO

Notes: STC 35 RATED OPENING.

Door normally closed, latched and secured.
Entry by valid card read or key override.
Throwing inside deadbolt will deactivate outside card reader allowing privacy.
Free egress at all times.

Set: 36.0

Doors: 146, 148, 246, 248

4 Hinge, Full Mortise, Hvy Wt	T4A3786 4-1/2" x 4-1/2"	US10BE	MK
1 Push Plate	70C-RKW	10BE	RO
1 Pull Plate	BF 111x70C	10BE	RO
1 Automatic Opener	6330	690	NO
1 Kick Plate	K1050 10" x 2" LDW CSK BEV	10BE	RO
1 Wall Stop	400	10BE	RO
3 Silencer	608-RKW		RO
2 Actuator, Wall Mount	505		NO

Set: 37.0

Doors: 312F.1, 312F.2

1 Bypass Door Hdwe	HBP200A x Size Required		PE
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2 Flush Pull RM782 10BE RO

Set: 38.0

Doors: 110.2, 110.3, 120.2, 120.3, 130.2, 150.3, 150.4, 150.5, 210.2, 220.3, 230.3

1 Hardware supplied with door 00

Set: 39.0

Doors: 113A, 141.1, 141A.2, 141A.3, 143.1, 143.2, 144.1

1 Medeco IC Cylinder x Type Req. x Match Owner's Exist
System 26 MC

Notes: Balance of hardware is existing to remain.

Set: 40.0

Doors: 141A.1, 303.1, 306B.4

1 Storeroom Lock LC 8204 LSL US10BE SA
 1 Medeco IC Cylinder x Type Req. x Match Owner's Exist
System 26 MC
 1 Electric Strike 1600-CLB 613E HS
 1 Position Switch DPS-M / W SU
 1 Card Reader Provided by Security Contractor OT
 1 Power Supply AQD1 SU

Notes: Balance of hardware is existing to remain.

Set: 41.0

Doors: 155.1

2 Electric Strike 9600 613E HS
 1 Automatic Opener 6061 690 NO
 2 Position Switch DPS-M / W SU
 1 Card Reader Provided by Security Contractor OT
 1 Power Supply AQD1 SU

Notes: Balance of hardware is existing to remain.

Confirm type of electric strike that is required with existing door hardware.

Set: 42.0

Doors: 130D

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1 Institutional Lock	LC 8217 LSL	US10BE	SA
2 Medeco IC Cylinder	x Type Req. x Match Owner's Exist System	26	MC
1 Electric Strike	1600-CLB	613E	HS
1 Position Switch	DPS-M / W		SU
2 Card Reader	Provided by Security Contractor		OT
1 Power Supply	AQD1		SU

Notes: Balance of hardware is existing to remain.

Door normally closed, latched and secured.
Entry and egress by valid card read.

Set: 43.0

Doors: 141.2, 201, 302A, 304B, 305.2, 305A, 305B, 306D.2, 309, 309A, 309B, S1-3, S2-3

1 Hardware is existing to remain			00
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Set: 44.0

Doors: 302B, 304A

1 Electric Strike	1600-CLB	613E	HS
1 Position Switch	DPS-M / W		SU
1 Card Reader	Provided by Security Contractor		OT

Notes: Door normally closed, latched and secured.
Entry by valid card read.
Free egress at all times.

Balance of hardware is existing to remain.

Mark	Hardware
100.1	2.0
100.2	1.0
100.3	4.0
100.4	3.0
110.1	24.1

110.2	38.0
110.3	38.0
113A	39.0
120.1	24.1
120.2	38.0
120.3	38.0

130.1	15.0
130.2	38.0
130A	28.0
130B	28.0
130C	28.0
130D	42.0

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IOWA CITY, IOWA**

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130E.1	33.0
130E.2	16.0
141.1	39.0
141.2	43.0
141A.1	40.0
141A.2	39.0
141A.3	39.0
142	6.0
143.1	39.0
143.2	39.0
144.1	39.0
144.2	25.0
145	34.0
146	36.0
147	25.0
148	36.0
150.1	15.0
150.2	15.0
150.3	38.0
150.4	38.0
150.5	38.0
150A.1	32.0
150A.2	5.0
150B	30.0
150C	28.0
150D	28.0
150E	28.0
150F	28.0
150G	29.0
150H	28.0
150I	28.0
150J	28.0
155.1	41.0
155.2	7.0
201	43.0
210.1	17.0
210.2	38.0
210A.1	28.0
210A.2	16.0
220.1	17.0

220.2	18.0
220.3	38.0
220A	28.0
220B	28.0
220C	28.0
220D	28.0
220E	28.0
220F	28.0
230.1	15.0
230.2	12.0
230.3	38.0
230A	28.0
230B	28.0
230C	28.0
232	26.0
240.1	18.0
240.2	13.0
240B	28.0
240C	28.0
240D	28.0
240E	28.0
240F	28.0
240G	27.0
240H.1	31.0
240H.2	22.0
241A	35.0
242	16.0
242A	21.1
244	34.0
245	19.0
246	36.0
247	25.0
248	36.0
249	8.0
250.1	10.0
250.2	11.0
250A	17.1
250C	28.0
250D	28.0
250E	28.0

250F	28.0
250G	31.0
250H	28.0
250J	28.0
250K	28.0
250L	28.0
250M	28.0
250N	28.0
301.1	20.0
301.2	14.0
301.3	24.0
301.4	24.0
302A	43.0
302B	44.0
302C	34.0
302D	25.0
303.1	40.0
303.2	17.0
303.3	21.0
304A	44.0
304B	43.0
305.1	16.0
305.2	43.0
305.3	16.0
305A	43.0
305B	43.0
306.1	9.0
306.2	9.0
306A	16.0
306A.1	17.0
306A.2	25.0
306B.1	22.0
306B.2	21.1
306B.3	17.0
306B.4	40.0
306C	22.0
306D.1	25.0
306D.2	43.0
306E	22.0
309	43.0

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309A	43.0
309B	43.0
311.1	15.0
311.2	23.0
311A	28.0
311B	28.0
311C	28.0
311D	28.0
311E	25.0
311F	28.0
311G	25.0
312A	28.0

312B	28.0
312C	28.0
312D	28.0
312E	28.0
312F.1	37.0
312F.2	37.0
313	15.0
313A	29.0
313B	28.0
313C	28.0
313D	30.0
313G	28.0

313H	28.0
314	15.0
314A	28.0
314B	28.0
314C	28.0
314D	28.0
314E	28.0
314F	28.0
S1-3	43.0
S2-3	43.0

END OF SECTION 087100

**SECTION 08 80 00
GLAZING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Insulating glass units.
- B. Glazing units.
- C. Glazing compounds.

1.02 REFERENCE STANDARDS

- 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. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers 2005 (Reapproved 2019).
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- E. ASTM C1036 - Standard Specification for Flat Glass 2021.
- F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2018.
- G. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass 2019.
- 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 2016.
- J. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation 2019.
- K. GANA (GM) - GANA Glazing Manual 2022.
- L. GANA (SM) - GANA Sealant Manual 2008.
- M. GANA (LGRM) - Laminated Glazing Reference Manual 2019.
- N. NFRC 100 - Procedure for Determining Fenestration Product U-factors 2020.
- O. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence 2020.
- P. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems 2023.

1.03 SUBMITTALS

- A. Product Data on Insulating Glass Unit and Glazing Unit 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: Submit two samples 12 by 12 inch in size of glass units.
- D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with GANA (GM), GANA (SM), and GANA (LGRM) for glazing installation methods.

1.05 FIELD CONDITIONS

- A. Do not install glazing when ambient temperature is less than 40 degrees F.
- B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.06 WARRANTY

- A. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.
- B. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Float Glass Manufacturers:
 - 1. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
 - 2. Guardian Glass, LLC: www.guardianglass.com/#sle.
 - 3. Pilkington North America Inc: www.pilkington.com/na/#sle.
 - 4. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.

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. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 - 2. 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.
 - 3. 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 weather barrier related materials described in other sections, as follows:
- 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: Comply with NFRC 300 test method.

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. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
 - 4. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.
- B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
 - 1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.

2.04 INSULATING GLASS UNITS

- A. Manufacturers:
 - 1. Cardinal Glass Industries: www.cardinalcorp.com
 - 2. Guardian Glass, LLC: www.guardianglass.com
 - 3. Oldcastle Building Envelope; www.obe.com
 - 4. Pilkington North America Inc: www.pilkington.com/na
 - 5. Viracon: www.viracon.com.
 - 6. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com
 - 7. Substitutions: See Section 01 25 00 - Substitution Procedures.
- B. Insulating Glass Properties:
 - 1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 - 2. 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.
 - 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 argon, hermetically sealed.
- C. IGU-1: Insulating Glass Units: Clear vision glass, double glazed.
 - 1. Applications: Exterior glazing unless otherwise indicated.
 - 2. Space between lites filled with argon.
 - 3. Outboard Lite: Heat-strengthened float glass, unless fully tempered safety glass is required, 1/4 inch thick, minimum.
 - a. Color: Clear.
 - b. Coating: VNE-63 on #2 surface.
 - 4. Inboard Lite: Heat-strengthened float glass, unless fully tempered safety glass is required, 1/4 inch thick, minimum.
 - a. Color: Clear.
 - 5. Total Thickness: 1 inch.
 - 6. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.25, nominal.
 - 7. Visible Light Transmittance (VLT): 62 percent, nominal.
 - 8. Shading Coefficient: 0.32, nominal.
 - 9. Solar Heat Gain Coefficient (SHGC): 0.28, nominal.

2.05 GLAZING UNITS

- A. LG-1: Laminated Safety Glazing, Non-fire rated: Laminated glass, clear, fully tempered, safety glass, ASTM C1172 and C1048, unless otherwise indicated.
 - 1. Applications:
 - a. Glazed lites in doors, except fire doors.
 - b. Interior windows, except fire-rated windows, or as otherwise indicated.
 - c. Glazed sidelights to doors, except in fire-rated walls and partitions.
 - 2. Color: Clear, low-iron.
 - 3. Thickness: 9/16 inch, unless otherwise indicated.
 - 4. Outer Lite: Tempered glass, low iron.
 - 5. Interlayer: Polyvinyl butyral (PVB), 0.06" thick.
 - 6. Inside Lite: Tempered glass, low iron.
 - 7. Impact Strength: Category II, tested in accordance with 16 CFR 1201.
- B. LG-2: Laminated Safety Glazing for Railings: Laminated glass, clear, fully tempered, safety glass, ASTM C1172 and C1048, unless otherwise indicated.
 - 1. Applications: Stair railings and other locations as indicated on drawings.

2. Color: Clear.
 3. Thickness: 9/16 inch, minimum, or as otherwise indicated or required for structural design.
 4. Outer Lite: Tempered glass.
 5. Interlayer: Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
 6. Interlayer, Inboard Side : Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
 7. Inside Lite: Tempered glass.
 8. Impact Strength: Category II, tested in accordance with 16 CFR 1201.
 9. Provide cutouts and holes required for hardware and inserts prior to tempering.
- C. LG-3: Laminated Safety Glazing for Top Hung Glazing: Laminated glass, translucent, fully tempered, safety glass, ASTM C1172 and C1048, unless otherwise indicated.
1. Applications: Transaction counters.
 2. Color: Clear.
 3. Thickness: 11/16 inch, minimum or as otherwise required for structural design.
 4. Outer Lites: Tempered glass.
 5. Interlayer: Polyvinyl butyral (PVB), thickness as required to meet performance criteria.
 6. Impact Strength: Category II, tested in accordance with 16 CFR 1201.
 7. Provide cutouts and holes required for hardware and inserts prior to tempering.
 8. Basis-of-Design: Guardian Ultra Clear Low Iron glazing with Clarity Anti-Reflective double sided coating on #1 and #4 surfaces.

2.06 GLAZING COMPOUNDS

- A. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, nonstaining; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

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. Spacer Shims: Silicone, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.
- C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.
- D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color clear.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.02 INSTALLATION, GENERAL

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- C. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

- D. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- E. Prevent 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, etc.

3.03 INSTALLATION - DRY GLAZING METHOD (TAPE AND TAPE)

- A. Application - Interior Glazed: Set glazing infills from the interior of the building.
- B. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- D. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- E. Place glazing tape on free perimeter of glazing in same manner described above.
- F. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- G. Carefully trim protruding tape with knife.

3.04 INSTALLATION - PRESSURE GLAZED SYSTEMS

- A. Application - Exterior Glazed: Set glazing infills from exterior side of building.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
- D. Install pressure plates without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - STRUCTURAL SILICONE GLAZING

- A. Application - Factory (Shop) Glazed: Follow basic guidelines of structural silicone glazing for glazing application.
- B. Provide design review of the glazing system and project details, adhesion testing, proper surface preparation, training and a quality service program.
- C. Provide only structural silicone sealant, tested and manufactured for structural glazing.

3.06 CLEANING

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove nonpermanent labels immediately after glazing installation is complete.
- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.07 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

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SECTION 09 05 61
COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
 - 1. Resilient tile.
 - 2. Linoleum tile.
 - 3. Carpet tile.
 - 4. Athletic wood flooring.
- B. Preparation of new concrete floor slabs for installation of floor coverings.
- C. Testing of concrete floor slabs for moisture and alkalinity (pH).

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Limitations on curing requirements for new concrete floor slabs.
- B. Section 09 64 66 - Wood Athletic Flooring: Moisture suppression penetrating sealer.
- C. Section 09 65 00 - Resilient Flooring: Adhesive primer.
- D. Section 09 65 16 - Linoleum Flooring: High moisture adhesive.
- E. Section 09 68 13 - Tile Carpeting: High moisture adhesive.

1.03 REFERENCE STANDARDS

- A. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride 2022.
- B. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes 2019a.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.05 SUBMITTALS

- A. 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.
- B. Testing Agency's Report:
 - 1. Description of areas tested; include floor plans and photographs if helpful.
 - 2. Summary of conditions encountered.
 - 3. Moisture and alkalinity (pH) test reports.
 - 4. Copies of specified test methods.
 - 5. Submit report to Architect.
 - 6. Submit report not more than two business days after conclusion of testing.

1.06 QUALITY ASSURANCE

- A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.
- B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
- C. Contractor's Responsibility Relating to Independent Agency Testing:
 - 1. Confirm date of start of testing at least 10 days prior to actual start.

2. Allow at least 4 business days on site for testing agency activities.
3. Achieve and maintain specified ambient conditions.
4. Notify Architect when specified ambient conditions have been achieved and when testing will start.

1.07 FIELD CONDITIONS

- A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.
- B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

- A. Perform following operations in the order indicated:
 1. Preliminary cleaning.
 2. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 3. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
 4. Patching, smoothing, and leveling, as required.
 5. Other preparation specified.

3.02 PRELIMINARY CLEANING

- A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.
- B. Do not use solvents or other chemicals for cleaning.

3.03 MOISTURE VAPOR EMISSION TESTING

- A. Test in accordance with ASTM F1869 and as follows.
- B. 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.
- C. Report: Report the information required by the test method.

3.04 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 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 for adhesives/primers/sealers/etc. specified, contact the Architect with solutions recommended by floor covering manufacturer.
- F. Report: Report the information required by the test method.

3.05 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. Test in accordance with ASTM F710.
- C. In the event that test values exceed floor covering manufacture's limits for adhesives/primer/sealers specified, contact the Architect with solutions recommended by floor covering manufacturer.

3.06 PREPARATION

- A. See individual floor covering section(s) for additional requirements.
- B. Comply with requirements and recommendations of floor covering manufacturer.
- C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
- D. Do not fill expansion joints, isolation joints, or other moving joints.

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 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

1.03 REFERENCE STANDARDS

- A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members 2016, with Supplement (2020).
- B. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units 2018.
- C. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 2019.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- E. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017 (Reapproved 2022).
- F. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members 2018.
- G. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products 2020.
- H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2020.
- I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness 2022.
- J. 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.
- K. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base 2019.
- L. ASTM C1278/C1278M - Standard Specification for Fiber-Reinforced Gypsum Panel 2017.
- M. ASTM C1288 - Standard Specification for Fiber-Cement Interior Substrate Sheets 2017.
- N. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units 2022.
- O. ASTM C1396/C1396M - Standard Specification for Gypsum Board 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 E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009 (Reapproved 2016).

- R. ASTM E413 - Classification for Rating Sound Insulation 2022.
- S. GA-216 - Application and Finishing of Gypsum Panel Products 2021.
- T. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 SUBMITTALS

- A. Control Joint Drawing: Provide drawings showing location of control joints in gypsum board assemblies.
- B. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
- C. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Interior Partitions: Provide completed assemblies with the following characteristics:
 - 1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
- C. Fire Rated Assemblies: Provide completed assemblies complying with applicable code.
 - 1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

2.02 METAL FRAMING MATERIALS

- A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary, but no less than 20 gauge (0.296") non-load bearing studs, to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
 - 1. At Wall Locations with tile backer and tile, and at wall heights over 16 feet: maximum, wall deflection shall be L/360 at 5 psf. Use no less than 20 gauge (0.033") structural studs, ANSI 108.11.
 - 2. Studs: "C" shaped with flat or formed webs.
 - 3. Runners: U shaped, sized to match studs.
 - 4. Ceiling Channels: C-shaped.
 - 5. Channel Bridging and Bracing: Pre-notched steel, 7/8 by 7/8 by 50 inches, 0.0329-inch minimum base-steel thickness. Provide in the following locations, as applicable:
 - a. Between stud punchouts (at 24" o.c. minimum) in framing for walls to be filled with foamed-in-place insulation.
 - b. In non-composite walls in excess of 60 inches (i.e. walls with gypsum board on only one side or walls with gypsum board on neither side (ex. above ceiling areas) at 24" maximum from horizontal tracks, and at 48" o.c. minimum.
- B. Grid Suspension System for Gypsum Board Ceiling: ASTM C 645, direct-hung system composed of main beams and cross-furring members that interlock.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armstrong World Industries, Inc.; Drywall Grid Systems.
 - b. Chicago Metallic Corporation; Drywall Grid System.
 - c. USG Corporation; Drywall Suspension System.
- C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws, and anti-friction bushings, preventing 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-rated head of partition joint systems of fire rating and movement required.
- D. Top of Wall Firestop: Use one of the following:
1. Deflection and Firestop Track: Intumescent strip factory-applied to track flanges expands when exposed to heat or flames to provide a perimeter joint seal.
 - a. Products:
 - 1) ClarkDietrich Building Systems; BlazeFrame Firestop Deflection Track: www.clarkdietrich.com.
 2. Preformed Top Track Firestop Seal:
 - a. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
 - b. Products:
 - 1) Hilti, Inc; Top Track Seal CFS TTS: www.us.hilti.com.
- E. Flat Sheet Blocking: Framing system manufacturer's steel sheet backing plates for use as backer plates to support shelves, cabinets, fixtures, handrails, etc. 20 gauge minimum. Length and width as required for items being supported.

2.03 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
1. CertainTeed Corporation: www.certainteed.com.
 2. Georgia-Pacific Gypsum: www.gpgypsum.com.
 3. National Gypsum Company: www.nationalgypsum.com.
 4. USG Corporation: www.usg.com.
- 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. Unfaced fiber-reinforced gypsum panels as defined in ASTM C1278/C1278M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
 3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
 - a. Provide mold resistant type on walls and ceilings in toilet rooms, janitor closets and other locations as indicated on drawings.
 4. 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.
 5. Thickness:
 - a. Vertical Surfaces: 5/8 inch.
 - b. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
- C. Backing Board For Tiled Areas:
1. Application: Surfaces behind tile locations.
 2. 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: 1/2 inch.
 3. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
 - a. Thickness: 1/2 inch.
 - b. Products:
 - 1) James Hardie Building Products, Inc: www.jameshardie.com.
 - 2) National Gypsum Company; PermaBase Brand Cement Board.
 - 3) USG Corporation; Durock Brand Cement Board.

2.04 GYPSUM WALLBOARD ACCESSORIES

- A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: As required to fill stud cavity.
- B. Acoustic Sealant: Acrylic emulsion latex or water-based elastomeric sealant; do not use solvent-based non-curing butyl sealant.
 - 1. Acceptable Products:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. United States Gypsum Co.; SHEETROCK Acoustical Sealant.
 - 2. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
 - 3. Applications:
 - a. Both faces of interior gypsum board partitions at perimeter relief joints and through penetrations.
 - b. As required for acoustical-rated constructions.
 - c. As required for gypsum board shaft-wall assemblies.
- C. Finishing Accessories: ASTM C1047, extruded aluminum alloy (6063 T5) or galvanized steel sheet ASTM A924/A924M G90, unless noted otherwise.
 - 1. Types: As detailed or required for finished appearance.
 - 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
- D. EJ-2 - Aluminum Expansion Joints: Three piece, extruded aluminum. Reveal widths as indicated on drawings.
 - 1. Finish: Clear anodized.
 - 2. Basis-of-Design: Fry Reglet, Drywall Expansion Joint DRM-50.
- E. High Abuse Corner Bead: Fry Reglet, DMCT-1250. Provide at locations indicated on drawings.
- F. Aluminum Reveal Trim: Extruded accessories of profiles and dimensions indicated.
 - 1. Acceptable Manufacturers:
 - a. Fry Reglet.
 - b. Gordon, Inc.
 - c. Pittcon Industries.
 - 2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
 - 3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.
- G. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
 - 1. Tape: 2 inch wide, creased paper tape for joints and corners.
- H. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
- I. 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.
- J. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.
- K. Mullion Closures: Spring loaded, extruded aluminum partition gap closures.
 - 1. Material: Aluminum extrusions, 6063-T5 or T6 temper, tensile strength 31 KSI.

2. Finish: Annodized to match color of storefront/curtain wall framing.
3. Provide acoustic insulation within mullion closure.
4. Basis-of-Design: Gordon, Inc., Mullion Mate Series 40 Partition Closures.
 - a. Substitutions: See Section 01 25 00 - Substitution Procedures.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that project conditions are appropriate for work of this section to commence.
- B. Do not begin installation of gypsum board panels until building is fully enclosed.

3.02 FRAMING INSTALLATION

- A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.
- B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
 1. Level ceiling system to a tolerance of 1/1200.
 2. Laterally brace entire suspension system.
- C. Studs: Space studs at 16 inches on center unless otherwise indicated.
 1. Extend partition framing to structure where indicated and to ceiling in other locations.
 2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
 3. 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. Blocking: Install wood blocking as specified in Division 6 Section "Rough Carpentry".

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. Acoustic Sealant: Install in accordance with manufacturer's instructions.
 1. Place continuous bead at perimeter of each layer of gypsum board.

3.04 BOARD INSTALLATION

- A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
- C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.
- D. Install panels with face side out. Butt panels together for a light contact as edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- E. Cover both faces of support framing with gypsum in concealed spaces (above ceilings, etc.), except in chases braced internally.
 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 2. Fit gypsum panels around ducts, pipes, and conduits.
 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.

- F. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- G. Install sound attenuation blankets before installing gypsum panels. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Form control and expansion joints with space between edges of adjoining gypsum panels.
- I. Cementitious Backing Board: Install over steel framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
 - 1. Where tile backing panels abut other types of panels in the same plane, shim surface.
- J. Installation on Metal Framing: Use screws for attachment of gypsum board.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
 - 1. In accordance with ASTM C 840 and GA-216.
 - 2. Not more than 30 feet apart on walls and ceilings over 50 feet long.
 - 3. Provide control joints at transitions between differing types of substrate supports (example: between stud framing supports and furring strips on masonry wall).
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

3.06 JOINT TREATMENT

- A. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - 1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
 - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
 - 3. Fill Coat: For second coat, use setting-type, sandable topping compound.
 - 4. Finish Coat: For third coat, use drying-type, all-purpose compound.
 - 5. Skim Coat: For final coat of Level 5 finish, use drying-type, all-purpose compound.
- B. 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: Wall areas above finished ceilings, whether or not accessible in the completed construction.
 - 3. At fire-rated wall areas above finished ceilings, provide minimum finish levels as required by fire-rated assembly.
- C. 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.
- D. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.07 PROTECTION

- A. Protect installed products from damage from weater, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to discoloration, sagging, or irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

3.08 TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

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**SECTION 09 30 00
TILING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Tile for floor applications.
- B. Tile for wall applications.
- C. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

- A. Section 09 21 16 - Gypsum Board Assemblies: Tile backer board.

1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium) 2019.
 - 1. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar 2017 (Reaffirmed 2022).
 - 2. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar 2017.
 - 3. 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 or Latex-Portland Cement Mortar 1999 (Reaffirmed 2021).
 - 4. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive 2019.
 - 5. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar 2021.
 - 6. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy 1999 (Reaffirmed 2019).
 - 7. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework 2017 (Reaffirmed 2022).
 - 8. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar 1999 (Reaffirmed 2019).
 - 9. 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).
 - 10. 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.
- B. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation 2023.

1.04 DEFINITIONS

- A. Construction Joints: The surface where two successive placements of concrete meet, across which it may be desirable to achieve bond and through which reinforcement may be made continuous.
- B. Contraction Joints/Control Joints: Formed, sawed or tooled groove in a concrete structure to create a weakened plane and regulate the location of cracking resulting from the dimensional change of different parts of the structure.
- C. Expansion Joints: (1) A separation provided between adjoining parts of a structure to allow movement where expansion is likely to exceed contraction; (2) a separation between pavement slabs on grade, filled with a compressible filler material; (3) an isolation joint intended to allow

independent movement between adjoining parts.

- D. Isolation Joints: A separation between adjoining parts of a concrete structure, usually a vertical plane, at a designated location such as to interfere least with performance of the structure, yet such as to allow relative movement in three directions and avoid formation of cracks elsewhere in the concrete and through which all or part of the bonded reinforcement is interrupted.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
- C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Wall Tile: 1 box (10 pieces) of each color of wall tile.
 - 2. Extra Floor Tile: 3 percent percent of each size, color, and surface finish combination.

1.06 QUALITY ASSURANCE

- A. To ensure single-source warranty requirements and compatibility of products, provide cleaners, sealing and maintenance products as well as grout, setting materials, underlayments, additives, accessories and factory-prepared dry-set mortars from the same manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 TILE

- A. Interior Wall Tile: Refer to Drawings for Finish Material Specification.
- B. Interior Floor Tile: Refer to Drawings for Finish Material Specification.

2.02 TRIM AND ACCESSORIES

- A. Non-Ceramic Trim: Brushed stainless steel, style and dimensions to suit application, for setting using tile mortar or adhesive.
 - 1. Applications:
 - a. Open edges of floor tile.
 - b. Applications as indicated on drawings.
 - 2. Manufacturers:
 - a. Schluter-Systems: www.schluter.com.

2.03 MORTAR MATERIALS

- A. Mortar Bond Coat Materials:
 - 1. Latex-Portland Cement type: ANSI A118.4.
 - a. Provide mortar, grout and accessories from the same manufacturer.
 - b. Provide one of the following:
 - 1) Bostik, Single-Flex.
 - 2) Mapei, Ultraflex.

2.04 GROUTS

- A. Grout:
 - 1. Provide mortar, grout and accessories from the same manufacturer.

2. Provide one of the following:
 - a. Urethane Grout: Water-based, urethane grout (modified ANSI 118.3-UG).
 - 1) Colors: To be selected by Architect from manufacturer's full range.
 - 2) Products:
 - (a) Basis-of-Design: Bostik, TruColor Pre-Mixed Grout.
 - b. Grout: Meet or exceed requirements of ANSI A118.3 and A118.6.
 - 1) Colors: Custom colors to be selected by Architect.
 - 2) Products:
 - (a) Basis-of-Design: Mapei, Flexcolor Design.

2.05 ACCESSORY MATERIALS

- A. Crack Isolation Membrane: Comply with ANSI 118.12.
 1. Provide mortar, grout and accessories from the same manufacturer.
 2. Provide one of the following:
 - a. Bostik, GoldPlus Waterproofing and Antifracture Membrane.
 - b. Mapei, Mapeguard 2.
- B. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.
- C. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

2.06 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
- B. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
- C. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.
- D. Verify that joints and cracks in tile substrate are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Protect surrounding work from damage.
- B. Vacuum clean surfaces and damp clean.
- C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

3.03 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19, manufacturer's instructions, and TCNA (HB) recommendations.

- 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. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- E. Place tile joints uniform in width. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
- F. Joint spacing for perimeter of sheet mounted tile shall match joint spacing of tile within the sheet.
- G. Form internal angles square and external angles bullnosed.
- H. Install non-ceramic trim in accordance with manufacturer's instructions.
- I. For installations indicated below, follow procedures in ANSI A108 Series tile installation standards for providing 95 percent mortar coverage.
 - 1. Tile floors composed of tiles 8 by 8 inch or larger.
 - 2. Tile floors composed of rib-backed tiles.
- J. Sound tile after setting. Replace hollow sounding units.
- K. Keep control and expansion joints free of mortar, grout, and adhesive.
- L. Install construction joints, perimeter joints and movement joints, as detailed on drawings and as otherwise directed by Architect, in accordance with The Tile Council of North America Handbook "Movement Joint Design Essentials EJ171."
- M. Expansion Joints: Locate expansion joints and other sealant-filled joints during installation of setting materials and tile. Do not saw-cut joints after installing tiles.
 - 1. Locate joints in tile surfaces directly above joints in concrete substrates.
- N. Allow tile to set for a minimum of 48 hours prior to grouting.
- O. Grout tile joints to comply with requirements of ANSI A108.10, unless otherwise indicated.
- P. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS

- A. Over interior concrete substrate, install in accordance with TCA Handbook Method F115 (modified), latex-portland cement mortar and urethane grout.
- B. Where cracks occur in new or existing concrete floors, provide crack isolation in accordance with The Tile Council of North America Handbook Method F125 & F125A.

3.05 INSTALLATION - SHOWERS

- A. At tiles shower floors and walls, install in accordance with TCA Handbook Method B422, pre-fabricated shower tray floor in lieu of mortar bed floor, thin set over substrate board and masonry walls; all with waterproofing membrane.
- B. Shower waterproofing system:
 - 1. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.
 - 2. Do not install tile or setting materials over waterproofing until waterproofing had cured and been tested to determine that it is watertight.
- C. Grout with specified grout.
- D. Seal joints between tile work and other work with sealant specified in Division 7 Section "Joint Sealers."

3.06 INSTALLATION - WALL TILE

- A. Over cementitious backer units on studs, install in accordance with The Tile Council of North America Handbook Method W244C, with latex-portland cement mortar and specified grout.
- B. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202 with latex-portland cement mortar and specified grout.

3.07 CLEANING

- A. Clean tile and grout surfaces.

3.08 PROTECTION

- A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

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SECTION 09 51 00
ACOUSTICAL CEILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Acoustical units.

1.02 REFERENCE STANDARDS

- A. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2022.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels 2019.
- C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions 2022.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products 2022.

1.03 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 dry.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate grid layout and related dimensioning, junctions with other ceiling finishes, and mechanical and electrical items installed in the ceiling.
- B. Product Data: Provide data on suspension system components and acoustical units.
- C. Samples: Submit two samples 6 x 6 inch in size illustrating material and finish of acoustical units.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Acoustical Units: Provide 2 boxes of each type and size panel provided on project..

1.05 FIELD CONDITIONS

- A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.01 ACOUSTICAL UNITS

- A. Acoustical Units - General: ASTM E1264, Class A.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product, approved prior to bid, by one of the following:
 - a. Armstrong World Industries, Inc.
 - b. Chicago Metallic Corporation.
 - c. USG Interiors, Inc.
 - 2. Acoustical Panel (ACP) Products: Refer to drawings for Finish Material Specification.
 - 3.

2.02 SUSPENSION SYSTEM(S)

- A. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with clips, splices, and perimeter moldings as required.
- B. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with clips, splices, and perimeter moldings as required.

1. Intermediate duty system with main and cross runners roll formed from cold-rolled steels sheet, prepainted, electrolytically zinc coated, or hot-dip galvanized.
2. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product, approved prior to bid, by one of the following:
 - a. Armstrong World Industries, Inc.
 - b. Chicago Metallic Corporation.
 - c. USG Interiors, Inc.
3. Suspension Systems: Refer to drawings for Finish Material Specification.

2.03 ACCESSORIES

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
 1. Attachment Devices: Size for five times the design load indicated in ASTM C 635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
 2. Wire Hangers, Braces and Ties: Zinc-coated carbon-steel wire; ASTM C641, Class 1, zinc coating, soft temper.
 - a. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C 635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106 inch diameter wire.
 3. Provide acoustic type hangers where indicated on drawings.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Perimeter Moldings: Same metal and finish as grid.
 1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid.
- D. Perimeter Trim: Extruded aluminum trim, height as indicated on drawings, white.
 1. Acceptable Products:
 - a. Armstrong, Axiom Classic Perimeter Trim.
 - b. Alpro, Aviar Perimeter Trim.
- E. Touch-up Paint: Type and color to match acoustical and grid units.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION

- A. Install after major above-ceiling work is complete.
- B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 1. Use longest practical lengths.
 2. Overlap and rivet corners.
- D. 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.

- E. 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.
- F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- G. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- H. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

- A. Install acoustical units in accordance with manufacturer's instructions.
- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units:
 - 1. Make field cut edges of same profile as factory edges.
 - 2. Double cut and field paint exposed reveal edges.
- F. Where round obstructions occur, provide preformed closures to match perimeter molding.

3.05 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION

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**SECTION 09 54 00
SEAMLESS ACOUSTIC CEILING AND WALL ASSEMBLIES**

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Acoustical ceiling panels
 - a. Wire hangers, fasteners, main runners, cross tees, and wall angle moldings
 - 1) Perimeter Trim
 - 2. Seamless acoustical wall panels.

1.02 RELATED SECTIONS

- A. Section 09 21 16 - Gypsum Board Assemblies
- B. Divisions 23 - HVAC Air Distribution
- C. Division 26 - Electrical

1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM A 1008 Standard Specification for Steel, Sheet, Cold Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
 - 2. ASTM A 641 Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire
 - 3. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
 - 4. ASTM C 645 Standard Specification for Metal Suspension Systems
 - 5. ASTM C 636 Recommended Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
 - 6. ASTM C754 AND C1858 All installations should be in compliance with these tests.
 - 7. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
 - 8. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
 - 9. ASTM E 580 Installation of Metal Suspension Systems in Areas Requiring Moderate Seismic Restraint
 - 10. ASTM C 423 Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - 11. ASTM E 1414 Standard Test Method for Airborne Sound Attenuation between Rooms Sharing a Common Ceiling Plenum
 - 12. ASTM E 1264 Classification for Acoustical Ceiling Products
 - 13. ASTM E3090 All references to suspension component property testing per this test method.
- B. International Building Code
- C. ASHRAE Standard 62.1-2004, Ventilation for Acceptable Indoor Air Quality
- D. NFPA 70 National Electrical Code
- E. ASCE 7 American Society of Civil Engineers, Minimum Design Loads for Buildings and Other Structures
- F. International Code Council-Evaluation Services - AC 156 Acceptance Criteria for Seismic Qualification Testing of Non-structural Components
- G. International Code Council-Evaluation Services Report - Seismic Engineer Report
 - 1. ESR 1289 - Armstrong Suspension Systems

1.04 SUBMITTALS

- A. Shop Drawings: Layout and details of ceilings. Show locations of items that are to be coordinated with, or supported by the ceilings.
- B. Installation Instructions: Submit manufacturer's installation instructions as referenced in Part three, Installation.
- C. Product Data: Submit manufacturer's technical data for each type of ceiling unit and suspension system required.
- D. Samples: Minimum 6 x 6 inch samples of specified panel; 8 inch long samples of exposed wall molding and suspension system, including main runner and 4 foot cross tees.
- E. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.

1.05 QUALITY ASSURANCE

- A. Single-Source Responsibility: Provide acoustical panel units and grid components by a single manufacturer.
- B. Fire Performance Characteristics: Identify acoustical ceiling components with appropriate markings of applicable testing and inspecting organization.
- C. Surface Burning Characteristics: As follows, tested per ASTM E 84 and complying with ASTM E 1264 Classification.
- D. Acoustical Panels: As with other architectural features located at the ceiling that may obstruct or skew the planned fire sprinkler pattern through possibly delay or accelerate the activation of the sprinkler or fire detection systems by channeling heat from a fire either toward or away from the device. Designers and installers are advised to consult a fire protection engineer, NFPA 13, or their local codes for guidance where automatic fire detection and suppression systems are present.
- E. Coordination of Work: Coordinate acoustical ceiling work with installers of related work including, but not limited to building insulation, gypsum board, light fixtures, mechanical systems, electrical systems, and sprinklers.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content. Store all material within temperature limits required by manufacturer.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaged units in any way.

1.07 PROJECT CONDITIONS

- A. Space Enclosure:
 - 1. Building areas to receive ceilings shall be free of construction dust and debris. Panels shall be installed in areas where the building is enclosed and the HVAC is continuously functioning. This product is not recommended for exterior applications, where standing water is present, or where moisture will come into direct contact with the ceiling.

1.08 WARRANTY

- A. Acoustical Panel: Submit a written warranty executed by the manufacturer, agreeing to repair or replace panels that fail within the warranty period. Failures include, but are not limited to the following:
 - 1. Acoustical Panels: Manufacturer's defects in material
 - 2. Grid System: Rusting and manufacturer's defects
- B. Warranty Period:
 - 1. Acoustical panels: Ten (10) years from date of substantial completion

2. Suspension: Ten (10) years from date of substantial completion

1.09 MAINTENANCE

- A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials described below that match products installed. Packaged with protective covering for storage and identified with appropriate labels.
 1. Acoustical Ceiling Units: Furnish quality of full-size units equal to 5.0 percent of amount installed.
 2. Exposed Suspension System Components: Furnish quantity of each exposed suspension component equal to 2.0 percent of amount installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Armstrong, AcoustiBuilt Seamless Acoustical Ceiling and Wall Systems.
 1. Substitutions: Refer to Section 01 25 00 - Substitution Procedures.

2.02 ACOUSTICAL CEILING UNITS

- A. Acoustical Panels
 1. Surface Texture: Fine
 2. Composition: Mineral Fiber
 3. Color: White
 4. Size: 48 in x 72 in x 7/8 in
 5. Edge Profile: Tapered edges four sides
 6. Noise Reduction Coefficient (NRC): ASTM C 423; Panel 0.80 (UL).
 7. Ceiling Attenuation Class (CAC): ASTM C 1414; Panel 46 (UL).
 8. Articulation Class (AC): ASTM E 1111
 9. Flame Spread: ASTM E 1264; Class A
 10. Light Reflectance (LR) White Panel: ASTM E 1477; 0.87
- B. Wall Attachments:
 1. Screws Coarse-thread drywall or laminating screws
 - a. #6 x 1-5/8" Coarse Thread Drywall Screws
 2. Adhesives:
 - a. Loctite PL Premium® Polyurethane Construction Adhesive.
 - b. OSI F38 Drywall Panel Adhesive.
- C. Ceiling Suspension Systems and Washers
 1. All main beams and cross tees shall be commercial quality hot-dipped galvanized steel
 - a. Main beam: manufactured main beam- 1-1/2" knurled face with screw stop reverse hem by 1-11/16 inches high. Drywall Main Beams are factory punched with cross tee routs, hanger wire holes, and main beam clip for a strong secure connection and fast accurate alignment. Both short span and drywall main beams are Heavy-duty performance per ASTM C635
 2. Cross Tees: manufactured cross tee- 1-1/2" knurled face with screw stop reverse hem by 1-1/2 inches high with factory punched cross tee routs and hanger wire holes and XL stake on clip for a strong secure connection.
 3. Wall Molding: 12ft Knurled Angle Molding 1-1/4" Face
 4. Hanger wire: a Class 1 zinc coating, soft temper, pre-stretched, with a yield stress load of at least time three times the design load, but not less than 12-gauge.
 5. Fasteners (for Panel attachment)
 - a. #6 x1-1/4" Fine thread or sharp point self-drilling drywall screws
 - b. Grip-plate washers.
 6. Perimeter Systems
 - a. Commercial quality extruded aluminum alloy 6063 trim channel, factory finished in baked polyester paint. Commercial quality galvanized steel unfinished T-bar connection clips; galvanized steel splice plates.

- 1) Color: White
- 2) Height: As indicated on drawings.
- 3) Basis-of-Design: Armstrong, Axiom Trim.

D. Finish

1. Joint Compound
 - a. Setting Compound: Lightweight setting-type drywall joint compound, Ultra lightweight drying-type drywall joint compound
 - b. Joint Tape: Self-Adhesive mesh drywall joint tape
2. Spray Applied Finish: Manufacturer's Fine Texture Finish for seamless acoustic panels.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's written instructions.
- B. Suspend main beam from overhead construction with hanger wires spaced 4-0 ft. or 6-0 ft. on center along the length of the main runner. Install hanger wires plumb and straight.
- C. Cross tees shall be installed 16" on center
- D. Install wall moldings/perimeter trim at intersection of suspended ceiling and vertical surfaces
- E. Main runners and cross tees shall be attached at perimeter conditions
- F. When determining the grid layout, consider the long edges of the boards must run parallel with the cross tees.
- G. This system relies on a square grid system to ensure panel edges align at centers of cross tees. If the installation does not meet these squareness requirements, the panel edges may run off the grid system.
 1. The system must be square to within 1/8" over a 48" x 48" module.
 2. The suspension system must be leveled to within 1/4" in 10'.

3.02 PREPARATION

- A. Do not proceed with installation until all wet work such as concrete, terrazzo, plastering and painting has been completed and thoroughly dried out, unless expressly permitted by manufacturer's printed recommendations.
 1. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.
 2. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

3.03 INSTALLATION

- A. Follow manufacturer installation instructions.
- B. Control joints are required following the standards used for gypsum board listed in ASTM C840, Section 20
 1. Ceilings with perimeter relief shall not exceed 50 LF and 2500 SF between control joints
 2. Ceilings without perimeter relief shall not exceed 30 LF and 900 SF between control joints
- C. Panel joints and fasteners are finished with tape and compound to create a flat surface. While the materials used to finish acoustic panels are also used to finish drywall, the procedure has unique requirements.
- D. Joint compound coverage shall be limited to preserve the acoustical performance of the panels. Compound at panel joints shall not exceed 8 inch widths. Compound applied to field fasteners shall not exceed 4 inch by 4-inch areas. All compound shall be smooth and free of tool marks and ridges. Panels are to be finished with taping knives. Production tools, including boxes, are not permitted.
- E. Sanding and inspection: Throughout the sanding process, inspect the surface frequently for flatness. Direct a light across the ceiling to highlight unevenness that requires attention.

- F. Fine Texture Finish shall be applied in 4 coat process (additional coat may be used to achieve the desired finish) as called out in the installation instructions. Apply fine texture finish for acoustic panels in multiple coats, layered to achieve a uniform appearance and acoustical performance. Practice spraying to ensure proper calibration and technique are achieved. Refer to manufacturer's installation videos.
 - 1. Must be applied with an air assist spray system (refer to manufacturers installation instructions for required equipment). The Fine texture finish is not intended for use with airless spray or to be manually applied by rolling.
 - 2. See manufactures installation instructions for correct pressure settings for spray system, finish preparation, spray calibration and spray procedure and technique.

3.04 ADJUSTING AND CLEANING

- A. To remove soot, dirt, and dust use a vacuum operating at low power with a soft brush or use a dry soot cleaning sponge.
- B. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members. Comply with manufacturer's instructions for cleaning and touch up of minor finish damage. Remove any ceiling products that cannot be successfully cleaned and or repaired. Replace with attic stock or new product to eliminate evidence of damage.

END OF SECTION

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SECTION 09 54 26
SUSPENDED WOOD CEILING SYSTEM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wood veneer ceiling clouds.
- B. Metal suspension system.

1.02 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.
- B. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2022.
- C. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels 2019.
- D. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions 2022.
- E. CISCA (WC) - Wood Ceilings Technical Guidelines 2009.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Sequence work to ensure ceilings are not installed until building is enclosed, dust generating activities have terminated, and overhead work is completed.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate grid layout and related dimensioning, attachment of wood ceiling components to grid, accessory attachments, junctions with other ceiling finishes, and mechanical and electrical items installed in the ceiling.
- B. Product Data: Provide data on wood ceiling components and suspension system components.
- C. Samples: Submit two full size samples illustrating material and finish of wood ceiling components.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wood ceiling components to project site in original, unopened packages.
- B. Store in fully enclosed space, flat, level and off the floor.

1.06 FIELD CONDITIONS

- A. Do not install suspended wood ceiling system until wet construction work is complete and permanent heat and air conditioning is installed and operating.

PART 2 PRODUCTS

2.01 SUSPENDED WOOD CEILING SYSTEM

- A. Performance Requirements:
 - 1. Design for maximum deflection of 1/360 of span.
- B. Linear Wood Planks: Composite wood core with wood veneer finish.
 - 1. Type: Individual channeled and perforated linear planks fabricated into clouds.
 - a. Plank Size: 5-1/2" x 96" nominal.
 - b. Plank Thickness: 3/4 inch.
 - c. Tongue and groove edges.
 - d. Species and Cut: Refer to drawings for Finish Specs.
 - e. Finish Color: Refer to drawings for Finish Specs.

2. Provide perimeter trim around clouds that match color, pattern and appearance of wood planks.
 3. Attachment to Suspension Grid: Clip attachment to suspension grid.
 4. Suspension System: Type specified below.
 5. Products:
 - a. Armstrong, Woodworks, Channeled Planks.
- C. Metal Suspension System:
1. General: Comply with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
 - a. Materials:
 - 1) Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
 2. Concealed Ceiling Suspension System:
 - a. Description: Engineered grid, with slotted faces in main tees, cross tees, hangers, trim molding, load resisting struts, hinge assemblies, and other suspension components required to support ceiling and other ceiling supported construction. Panels installed from below by inserting torsion springs into slots in faces of main tees of ceiling grid.
 - b. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
 - c. Profile: Flat.
 - d. Finish: Powder coat.
 - e. Color: Black.
 - f. Products:
 3. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement.
- D. Accessories: Manufacturer's standard accessories for installation method indicated, seismic requirements and above-ceiling accessibility.

2.02 FABRICATION

- A. Shop fabricate wood ceiling components to the greatest extent possible.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Do not install ceiling until after interior wet work is dry.

3.02 PREPARATION

- A. Layout wood ceiling components in pattern according to reflected ceiling plan and as shown on shop drawings.
- B. Acclimate wood ceiling materials by removing from packaging in installation area a minimum of 48 hours prior to installation.

3.03 INSTALLATION

- A. General: Install suspended wood ceiling system in accordance with CISCA (WC).
- B. Suspension System:
 1. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
 2. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
 3. 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.

4. 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.
 5. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
 6. Do not eccentrically load system or induce rotation of runners.
- C. Wood Ceiling:
1. Install wood ceilings in accordance with manufacturer's instructions.
 2. Fit wood components in place, free from damaged edges or other defects detrimental to appearance and function.
 3. Install components in uniform plane, and free from twist, warp, and dents.
 4. Cut to fit irregular grid and perimeter edge trim.
 5. Make field cut edges of same profile as factory edges, seal and finish according to manufacturer.

3.04 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

3.05 CLEANING

- A. Clean and touch up minor finish damage. Remove and replace components that cannot be successfully cleaned and repaired.

END OF SECTION

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**SECTION 09 65 00
RESILIENT FLOORING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Resilient tile flooring.
- B. Resilient base.
- C. Installation accessories.

1.02 REFERENCE STANDARDS

- A. ASTM F1344 - Standard Specification for Rubber Floor Tile 2021a.
- B. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile 2020.
- C. ASTM F1861 - Standard Specification for Resilient Wall Base 2021.

1.03 SUBMITTALS

- A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- B. Verification Samples: Submit two samples, 6 by 6 inch in size illustrating color and pattern for each resilient flooring product specified.
- C. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Flooring Material: 20 square feet of each type and color.
 - 2. Extra Wall Base: 10 linear feet of each type and color.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store all materials off of the floor in an acclimatized, weather-tight space.
- B. Protect roll materials from damage by storing on end.
- C. Do not double stack pallets.

1.05 FIELD CONDITIONS

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.06 WARRANTY

- A. Luxury Vinyl Tile: Provide manufacturer's 15 year warranty covering excessive wear, odor, and defects.
- B. Rubber Tile and Stair Treads: Provide manufacturer's 15 year wear warranty.

PART 2 PRODUCTS

2.01 TILE FLOORING

- A. Luxury Vinyl Tile (RF-1):
 - 1. Minimum Requirements: Comply with ASTM F1700, Class III.
 - 2. Adhesive: Basis-of-Design manufacturer is Interface. Provide manufacturer's HM99 High Moisture Adhesive which provides moisture limits up to 99% RH and between 8-12 pH.
 - 3. Basis-of-Design: See drawings for interior Finish Specs. Provide the basis-of-design product or a comparable product approved prior to bid.
- B. Rubber Tile (RF-2): Homogeneous, color and pattern throughout thickness.
 - 1. Minimum Requirements: Comply with ASTM F1344, Type IB, Grade 2.
 - 2. Size: 40 x 40 inch nominal.
 - 3. Total Thickness: 0.14 inch

4. Adhesive: Basis-of-Design manufacturer is Nora by Interface. Provide manufacturer's nTx 020 primer and factory applied nTx backing which has no moisture limits for installation.
5. Basis-of-Design: See drawings for interior Finish Specs. Provide the basis-of-design product or a comparable product approved prior to bid.

2.02 STAIR COVERING

- A. Stair Treads with Integral Risers (RUB-1): Rubber; full height of riser, full width and depth of tread in one piece; tapered thickness.
 1. Nosing: Square.
 2. Basis-of-Design: See drawings for interior Finish Specs. Provide the basis-of-design product or a comparable product approved prior to bid.

2.03 RESILIENT BASE

- A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
 1. Height: 4 inch.
 2. Thickness: 0.125 inch.
 3. Length: Roll.
 4. Basis-of-Design Refer to Finish Material Specification on Drawings. Provide the basis-of-design product or a comparable product approved prior to bid.

2.04 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers and Adhesives: Waterproof; types specified, or if not specifically specified, as recommended by resilient flooring manufacturer, compatible with materials being adhered and for conditions present at time of installation.
 1. Provide adhesives recommended by manufacturer for installation on cementitious sub-floor surface moisture and pH levels present at time of installation.
 2. Provide floor sealers for surfaces that test over adhesive manufacturer's maximum recommended moisture/pH levels. Follow adhesive manufacturer's recommendations for sealer products and application as required to meet manufacturer's warranty requirements.
- C. Moldings, Transition and Edge Strips: Same material as flooring.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
 1. Provide sealers and adhesives recommended by manufacturer for installation on cementitious sub-floor surface moisture and pH levels present at time of installation.

3.02 PREPARATION

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
- C. Prohibit traffic until filler is fully cured.

3.03 INSTALLATION - GENERAL

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Adhesive-Applied Installation:
 1. Spread only enough adhesive to permit installation of materials before initial set.

2. Fit joints and butt seams tightly.
 3. Set flooring in place, press with heavy roller to attain full adhesion.
- D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
 2. Resilient Strips: Attach to substrate using adhesive.
- F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- G. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.

3.04 INSTALLATION - TILE FLOORING

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.
- B. Install plank tile with a random offset of at least 6 inches from adjacent rows.

3.05 INSTALLATION - RESILIENT BASE

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. Scribe and fit to door frames and other interruptions.

3.06 INSTALLATION - STAIR COVERINGS

- A. Install stair coverings in one piece for full width and depth of tread.
- B. Adhere over entire surface. Fit accurately and securely.

3.07 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

3.08 PROTECTION

- A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

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**SECTION 09 66 00
PRECAST CEMENT TERRAZZO STAIR TREADS AND RISERS**

PART 1 – GENERAL

1.01 SUMMARY

- A. Precast Terrazzo Stairs and Risers.
- B. Setting material, grouts, sealants and caulks
- C. Installation of precast terrazzo.
- D. Related work not specified under this section
 - 1. Section 05 51 00 - Metal Stairs: Installation of steel stairs to receive precast terrazzo

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. ASTM C-150
 - 2. ASTM C-33
 - 3. ASTM C-140
 - 4. ASTM C-293
 - 5. ASTM C-1028
- B. National Terrazzo and Mosaic Association Inc. (NTMA)
- C. Federal Register Part III
 - 1. 28 CFR Part 36

1.03 SUBMITTALS

- A. Shop Drawings
 - 1. Submit shop drawings of all precast terrazzo items showing detail sections and profile for all precast items. Details shall show all reinforcing and special hardware for fastening.
- B. Samples:
 - 1. Submit maximum of 3 samples 3" x 6" size for specified color.
 - 2. Submit two copies of NTMA maintenance literature.
 - 3. Quality Assurance and Procedure Program
- C. Certification:
 - 1. Suppliers shall furnish certification attesting that materials meet specification requirements.

1.04 QUALITY ASSURANCE

- A. NTMA Standards: Comply with specified provisions and recommendations of the National Terrazzo & Mosaic Association, Inc. (NTMA).
- B. Manufacturer's Instructions: In addition to specified requirements, comply with precast terrazzo manufacturer's instructions and recommendations for substrate preparation, materials storage, mixing and application, finishing and curing.
- C. Qualifications: Precast Terrazzo Manufacturer and Trade Contractor must have a minimum of 5 years of successful experience on projects of similar magnitude and complexity to that indicated project. Manufacturer and contractor to be prequalified by Architect prior to bidding. Failure to prequalify will void bid.
- D. Manufacturer to supply a written Quality Assurance Program and Procedure manual.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Packaging and Shipping: Precast terrazzo to be palletized and shrink wrapped, delivered in original unopened packaging with legible manufacturer identification, including size, piece number, quantities, manufacturer date and inspector initials.

- B. Storage and Protection: Precast terrazzo to be stored indoors, in a climate-controlled environment, sheltered from moisture in original packaging. Protect from damage by other trades.
- C. Report all damage due to shipment immediately. Customer is required to sign the Bill of Lading slip noting damaged product. Picture proof is required.

1.06 WARRANTY

- A. Manufacturer/Installer shall warrant installed system for a period of 1 year from date of substantial completion against failure of workmanship and materials.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer:
 - 1. Wausau Tile, Inc.

2.02 MATERIALS

- A. Portland Cement: ASTM C-150 Specifications for Portland Cement.
- B. Pozzitive: ASTM C 1202, Rapid Chloride Permeability Test, Coulombs, upto 40% cement replacement, 90 days.
- C. Aggregates: All aggregates to meet ASTM C-33 specifications, cleaned and properly graded to size. Aggregate shall be blended to meet individual project requirements.
- D. Marble chips, size to conform with NTMA gradation standards.
- E. Coloring; Pigments used shall be inorganic, resistant to alkalinity and used per manufacturer's recommendations to match color mix indicated on drawings.
- F. Reinforcement and Hardware:
 - 1. To conform with NTMA and Manufacturer's design.
 - 2. Reinforce precast with deformed rods or wire mesh or both as recommended by precast terrazzo manufacturer.
- G. Abrasive Inserts: Shall consist of silica carbide and black epoxy, three lines.
- H. Caulks & Sealants:
 - 1. Urethane or Polyurethane Sealant
 - 2. Color to be selected by Architect from standard color pallet.
- I. Cleaner: Liquid neutral chemical cleaner, with pH factor between 7 and 8, of formulation recommended by sealer manufacture for type of precast terrazzo used and complying with NTMA requirements.
- J. Sealer: Colorless, slip and stain-resistant penetrating sealer with pH factor between 7 and 8, that does not affect color or physical properties of precast terrazzo surface. Flash point (ASTM D56): 80 degrees F, Minimum.
- K. Performance Requirements:
 - 1. Compressive Strength 4000 p.s.i.
 - 2. Flexural Strength 600 p.s.i.

2.03 MANUFACTURED UNITS

- A. Sizing Tolerances:
 - 1. All units to conform to shop drawings with a 1/16" tolerance in dimension.
- B. Precast Surfaces and Edges:
 - 1. All exposed edges to be ground and polished with a minimum of 1/16" bevel.
 - 2. All finished surfaces to be ground and polished, free of holes and to have overall uniformity in matrix and aggregate.
 - 3. All precast terrazzo finished surfaces to be sealed with a sealer approved by manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine areas to receive precast terrazzo for the following:
 - 1. Defects in existing work.
 - 2. Deviations beyond allowable tolerances for the substrate.
- B. Start work only when all defects have been corrected by others.

3.02 INSTALLATION

- A. Setting:
 - 1. Setting methods will vary per product. Set accurately as shown on the approved shop drawings. Contact your setting material manufacturer with any questions on proper bonding of all materials.
 - 2. Setting methods are:
 - a. Cement based setting materials: Contact your selected manufacturer as recommended or specified. Setting materials can change without notice.
 - b. Epoxy based setting materials: Contact your selected manufacturer as recommended or specified. Setting materials can change without notice.
 - 3. All thinset materials, whether cement or epoxy based, will require a full setting bed be applied to all appropriate surfaces of the precast terrazzo, vertical and horizontal, where contact is made with the substrate or structural base.
 - 4. Alignment of precast should be straight and true to all dimensions. It may not vary more than 1/8" in length, height or width.
 - 5. Install anchors as shown on details, if required.
 - 6. Fill joints between with manufacturer – approved caulk or as specified.
- B. Protection:
 - 1. Upon completion, the work shall be ready for final inspection and acceptance by owner or owner agent.
 - 2. Protect the finished work at completion of terrazzo work.
 - 3. Finish: Seal all precast cement terrazzo surfaces with a sealer approved by terrazzo manufacturer.

END OF SECTION

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**SECTION 09 68 13
TILE CARPETING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Carpet tile, fully adhered.

1.02 SUBMITTALS

- A. Shop Drawings: Indicate the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
 - 2. Carpet tile type, color, and dye lot.
 - 3. Type of subfloor.
 - 4. Type of installation.
 - 5. Pattern of installation.
 - 6. Pattern type, location, and direction.
 - 7. Pile direction.
 - 8. Type, color, and location of insets and borders.
 - 9. Type, color, and location of edge, transition, and other accessory strips.
 - 10. Transition details to other flooring materials.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
- D. Manufacturer's Installation Instructions: Indicate special procedures.
- E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.
 - 2. Self-Adhesive Spot Stickers: Provide roll of one hundred sticker spots.

1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
 - a. Review delivery, storage, and handling procedures.
 - b. Review ambient conditions and ventilation procedures.
 - c. Review subfloor preparation procedures.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in installing carpet tile with minimum five years documented experience.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.
- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.

1.05 FIELD CONDITIONS

- A. Comply with CRI 104.

1.06 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, loss of tuft bind strength, loss of face fiber, and delamination.
 - 3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Carpet Tile : Products: Refer to drawings for Finish Material Specifications.

2.02 ACCESSORIES

- A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.
- B. Backing and High Moisture Adhesive: Provide manufacturer's (Basis-of-design manufacturer is Interface) Readybac backing and HM99 adhesive, which is approved for installation on up to 99% RH and 12 pH in floor slab for installation of all carpet tile.
- C. High Moisture Adhesive: Provide manufacturer's (Basis-of-Design manufacturer is Shaw) Shaw 4151 adhesive, which is approved for installation on up to 99% RH, calcium chloride up to 10 lbs. and pH up to 12 in slabs-on-grade for installation of carpet tile (calcium chloride and pH testing is not required on above grade slabs).
- D. Metal Edge/Transition Strips: Extruded aluminum with mill finish of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
- B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.
- C. Test moisture emission rates and alkalinity levels in accordance with ASTM F710.

3.02 PREPARATION

- A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- C. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- D. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.
- E. Clean metal substrates of grease, oil, soil and rust, and prime if directed by adhesive manufacturer. Rough sand painted metal surfaces and remove loose paint. Sand aluminum surfaces, to remove metal oxides, immediately before applying adhesive.
- F. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.03 INSTALLATION

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install carpet tile in accordance with manufacturer's instructions and CRI 104 Section 14 "Carpet Modules".
- C. Blend carpet from different cartons to ensure minimal variation in color match.
- D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
- E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set in directions and patterns indicated on drawings.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Trim carpet tile neatly at walls and around interruptions.
- H. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING AND PROTECTION

- A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
- B. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- C. Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."
- D. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION

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**SECTION 09 72 00
WALL COVERINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall covering.

1.02 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.

1.03 SUBMITTALS

- A. Product Data: Provide data on wall covering and adhesive.
- B. Shop Drawings: Indicate wall elevations with seaming layout.
- C. Samples: Submit two samples of wall covering, 24 x full width inch in size illustrating color, finish, and texture.
- D. Maintenance Data: Submit data on cleaning, touch-up, and repair of covered surfaces.

1.04 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Provide wall coverings and adhesives with the following fire-test-response characteristics as determined by testing identical products applied with identical adhesives to substrates per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Surface-Burning Characteristics: As follows, per ASTM E 84:
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 - 2. Delete both subparagraphs below if no textile wall covering or if test above and protection by automatic sprinkler system are acceptable alternatives that meet requirements of authorities having jurisdiction.
 - 3. Fire-Growth Contribution: Textile wall coverings tested according to NFPA 265 and complying with Method A test protocol in IBC 2000, Section 803.5.1.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Inspect roll materials at arrival on site, to verify acceptability.
- B. Protect packaged adhesive from temperature cycling and cold temperatures.
- C. Do not store roll goods on end.

1.06 FIELD CONDITIONS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the adhesive or wall covering product manufacturer.
- B. Maintain these conditions 24 hours before, during, and after installation of adhesive and wall covering.

PART 2 PRODUCTS

2.01 WALL COVERINGS

- A. General Requirements:
 - 1. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84.
- B. Wall Covering Products: Refer to drawings for interior Finish Specs.
- C. Adhesive: Type recommended by wall covering manufacturer to suit application to substrate.

- D. Primer/Sealer: Mildew-resistant primer/sealer complying with requirements in Division 9 Section "Painting and Coatings" and recommended in writing by wall-covering manufacturer for intended substrate.
- E. Seam Tape: As recommended in writing by wall-covering manufacturer.
- F. Substrate Primer and Sealer: Alkyd enamel type.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are prime painted and ready to receive work, and comply with requirements of wall covering manufacturer.
- B. Verify flatness tolerance of surfaces does not vary more than 1/8 inch in 10 feet nor vary at a rate greater than 1/16 inch/ft.

3.02 PREPARATION

- A. Wash impervious surfaces with tetra-sodium phosphate, rinse and neutralize; wipe dry.
- B. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
- C. Surfaces: Correct defects and clean surfaces that affect work of this section. Remove existing coatings that exhibit loose surface defects.
- D. Apply one coat of primer sealer to substrate surfaces. Allow to dry. Lightly sand smooth.
- E. Vacuum clean surfaces free of loose particles.

3.03 INSTALLATION

- A. Apply adhesive and wall covering in accordance with manufacturer's instructions.
- B. Apply wall covering smooth, without wrinkles, gaps or overlaps. Eliminate air pockets and ensure full bond to substrate surface.
- C. Horizontal seams are not acceptable.
- D. Do not seam within 2 inches of internal corners or within 6 inches of external corners.
- E. Install wall covering before installation of bases and items attached to or spaced slightly from wall surface.
- F. Remove excess adhesive while wet from seam before proceeding to next wall covering sheet. Wipe clean with dry cloth.

3.04 CLEANING

- A. Clean wall coverings of excess adhesive, dust, dirt, and other contaminants.
- B. Reinstall wall plates and accessories removed prior to work of this section.

3.05 PROTECTION

- A. Do not permit construction activities at or near finished wall covering areas.

END OF SECTION

**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. Floors, unless specifically indicated.
 - 6. Glass.
 - 7. Concealed pipes, ducts, and conduits.
 - 8. Data cable:
 - a. Painter shall be aware that any amount of paint or overspray of paint on data cable will void the warranty of the data cable. Attempts to remove paint by chemical or physical means from data cable is not allowed. All data cable with paint/overspray shall be required to be fully replaced. Entire run of cable will be replaced. No splicing is allowed.

1.02 REFERENCE STANDARDS

- A. SSPC-SP 3 - Power Tool Cleaning 2018.

1.03 SUBMITTALS

- A. 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. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 - 3. Manufacturer's installation instructions.
- B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
- C. Maintenance Data: Submit data including care and cleaning instructions, touch-up procedures, and repair of painted and finished surfaces.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Paint and Coating: 1 full quart of each color and sheen.

1.04 QUALITY ASSURANCE

- A. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample for each type of coating and substrate required.
 - 1. Wall Surfaces: Provide samples on at least 100 sq. ft.
 - 2. Final approval of colors will be from benchmark samples.

1.05 DELIVERY, STORAGE, AND 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 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 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. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.

2.02 PAINTS AND 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. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
 - 4. Supply each paint material in quantity required to complete entire project's work from a single production run.
 - 5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

2.03 PAINT SYSTEMS - EXTERIOR

- A. Exterior Galvanized Metal Indicated to be Painted:
 - 1. Primer:
 - a. Benjamin Moore & Co.: COROTECH Polyamide Epoxy Primer V150.
 - b. Diamond Vogel: Mult-E-Prime 500 Hi-Build Epoxy Primer
 - c. PPG; 95-245 Series Pitt-Guard DTR Polyamide Epoxy Coating.
 - d. Sherwin-Williams: Tile-Clad High Solids.
 - e. Tnemec; Series 27 WB Typoxy Polymide Epoxy.
 - 2. Intermediate Coat:
 - a. Benjamin Moore & Co.: COROTECH Epoxy Mastic Coating V160.
 - b. Diamond Vogel: Multi-E-Poxy 180 Epoxy Mastic.
 - c. PPG; 95-8000 Series Pitthane High-Build Urethane Enamel.
 - d. Sherwin-Williams; Macropoxy 646.
 - e. Tnemec; None required.
 - 3. Topcoat:
 - a. Benjamin Moore & Co.: COROTECH Aliphatic Acrylic Urethane V500.
 - b. Diamond Vogel; Multi-Thane 330 High Solids Acrylic Polyurethane.
 - c. PPG; 95-8000 Series Pitthane High-Build Urethane Enamel.
 - d. Sherwin-Williams: Acrolon 218.

- e. Tnemec; Series 1075 Endura-Shield II.
- B. Exterior Existing EIFS to be Painted:
 - 1. Surface prep - Power wash to remove all contaminants
 - 2. Prime coat:
 - a. Benjamin Moore & Co.: CORONADO TEXCRETE 3194 at 90-110 sq. ft /gallon
 - b. PPG Paints: Series 4-2 Perma-Crete at 150 - 200 sq ft / gallon
 - c. Tnemec, Series 156 Enviro-Crete at 120-140 sq ft / gallon
 - 3. Finish coat:
 - a. Benjamin Moore & Co.: CORONADO TEXCRETE 3194 at 90-110 sq. ft /gallon
 - b. PPG Paints: Series 4-110XI Perma-Crete at 100 – 135 sq ft / gallon
 - c. Tnemec, Series 156 Enviro-Crete at 120-140 sq ft / gallon
- C. Exterior Existing Stucco to be Painted:
 - 1. Surface prep - Power wash to remove all contaminants.
 - 2. Primer:
 - a. Benjamin Moore & Co.: Ultra Spec Masonry Sealer 608.
 - b. Sherwin-Williams, Loxon Concrete & Masonry Primer/Sealer A24W8300.
 - c. PPG Paints: Perma-Crete Concrete & Masonry Primer/Sealer, 4-603XI.
 - 3. Finish Coats (2 Coats):
 - a. Benjamin Moore & Co.:Ultra Spec Ext Gloss Finish N440.
 - b. Sherwin-Williams SuperPaint, gloss as selected by Architect.
 - c. PPG Paints: SunProof, gloss as selected by Architect.

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.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct 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. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Galvanized Surfaces:
 - 1. Prepare surface according to SSPC-SP 3.

3.03 APPLICATION

- A. Apply products in accordance with manufacturer's written instructions.
- 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. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

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. 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. Elevator pit ladders.
 - 3. Prime surfaces to receive wall coverings.
 - 4. 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.
- 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, bar code labels, and operating parts of equipment.
 - 5. Floors, unless specifically indicated.
 - 6. Ceramic and other tiles.
 - 7. Glass.
 - 8. Concealed pipes, ducts, and conduits.
 - 9. Data cable.
 - a. Painter shall be aware that any amount of paint or overspray of paint on data cable will void the warranty of the data cable. Attempts to remove paint by chemical or physical means from data cable is not allowed. All data cable with paint/overspray shall be required to be fully replaced. Entire run of cable will be replaced. No splicing is allowed.

1.02 REFERENCE STANDARDS

- A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.
- B. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).
- C. SSPC-SP 3 - Power Tool Cleaning 2018.
- D. SSPC-SP 6 - Commercial Blast Cleaning 2007.
- E. SSPC-SP 13 - Surface Preparation of Concrete 2018.

1.03 SUBMITTALS

- A. 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. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
 - 3. Manufacturer's installation instructions.

- B. Samples: Submit two paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
 - 1. Where sheen is specified, submit samples in only that sheen.
- C. Manufacturer's Instructions: Indicate special surface preparation procedures.
- D. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
 - 2. Label each container with color in addition to the manufacturer's label.

1.04 QUALITY ASSURANCE

- A. Properly Painted Surface: Paints on the interior surfaces of structures shall be that of a properly painted surface as defined by PCA Standard P1. "A "properly painted surface" is defined as uniform in appearance, color, texture, hiding and sheen. It is also free of foreign material, lumps, skins, runs, sags, holidays, misses, or insufficient coverage. It is also a surface free of drips, spatters, spills or overspray caused by the painting and decorating contractor's workforce. In order to determine whether a surface has been "properly painted" it shall be examined without magnification at a distance of thirty-nine (39) inches or one (1) meter, or more, under finished lighting conditions and from a normal viewing position."
- B. Painter shall not move onto next step of coating until previous step has been approved by Design Professional (@ primer and 1st coats) for each surface being painted.

1.05 DELIVERY, STORAGE, AND 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 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's 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 manufacturer'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 ft 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.

2.02 PAINTS AND 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. Supply each paint material in quantity required to complete entire project's work from a single production run.

3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

2.03 PAINT SYSTEMS - INTERIOR

- A. Interior Gypsum Board Surfaces to be Painted:
 1. Two top coats and one coat primer.
 2. Top Coats for Walls: Interior Eggshell Latex.
 - a. Products:
 - 1) Benjamin Moore Super Hide Zero VOC Eggshell 0357.
 - 2) Diamond Vogel, Vantage Plus Interior Latex Eggshell Enamel
 - 3) PPG Paints Speedhide Interior Latex, 6-411 Series, Eggshell. (MPI #44)
 - 4) Pratt & Lambert Pro-Hide Gold Ultra Interior Latex, Eggshell.
 - 5) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Eg-Shel.
 3. Top Coats for Ceilings: Interior Flat Latex.
 - a. Products:
 - 1) Benjamin Moore Super Hide Zero VOC Flat 0355.
 - 2) Diamond Vogel, Vantage Plus Interior Latex Flat Enamel.
 - 3) PPG Paints Speedhide Interior Latex, Flat.
 - 4) Pratt & Lambert Pro-Hide Gold Ultra Interior Latex, Flat.
 - 5) Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Flat.
 4. Primer: As recommended by top coat manufacturer for specific substrate.
- B. Concrete and Concrete Masonry Units: Interior Semi-Gloss Latex.
 1. Products:
 - a. Benjamin Moore Super Hide Zero VOC Semi-Gloss 0358.
 - b. Diamond Vogel, Vantage Plus interior Latex Semi-Gloss Enamel.
 - c. PPG Paints Speedhide Interior Latex, Semi-Gloss.
 - d. Pratt & Lambert Pro-Hide Gold Interior Latex, Semi-Gloss.
 - e. Sherwin-Williams ProMar 200 Zero VOC Interior Latex, Semi-Gloss.
- C. Ferrous and Galvanized Metal Surfaces to be Painted: For surfaces subject to frequent contact by occupants, including metals:
 1. Two top coats and one coat primer.
 2. Top Coat(s): Interior Epoxy-Modified Latex.
 - a. Applications: Railings, handrails and guardrails.
 - b. Products:
 - 1) Benjamin Moore COROTECH Pre-Catalyzed Waterborne Epoxy Semi-Gloss V341.
 - 2) Diamond Vogel, Eas-E-Poxy Pre-Catalyzed Waterborne Semi-Gloss Epoxy
 - 3) PPG Paints Aquapon WB EP Two-Component Waterborne Epoxy Coating, 98E-1/98E-100 Series, Semi-Gloss. (MPI #215)
 - 4) PPG Paints Aquapon WB EP Two-Component Waterborne Epoxy Coating, 98E-1/98E-98 Series, Gloss. (MPI #115)
 - 5) Sherwin-Williams Waterbased Catalyzed Epoxy, Semi-Gloss.
 3. Top Coat(s): Interior Light Industrial Coating, Water Based.
 - a. Applications: Doors, door frames, miscellaneous metals.
 - b. Products:
 - 1) Benjamin Moore COROTECH Acrylic DTM Enamel Semi-Gloss V331.
 - 2) Diamond Vogel, Finium DTM-AT Acrylic Semi-Gloss.
 - 3) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel. 4216 HP Series, Semi-Gloss. (MPI #153)
 - 4) Sherwin-Williams Pro Industrial Acrylic Coating, Semi-Gloss.
- D. Interior Epoxy Coating: Including gypsum board and concrete masonry units.
 1. Primer for gypsum wallboard: As recommended by manufacturer.
 2. Primer for concrete masonry: Masonry filler.

3. Finish Coatings: Two coats. Provide one of the following:
 - a. Benjamin Moore COROTECH Pre-Catalyzed Waterborne Epoxy Semi-Gloss V341.
 - b. Diamond Vogel, Eas-E-Poxy Pre-Catalyzed Waterborne Epoxy Semi-Gloss.
 - c. Pittsburgh Paints; PITT-GLAZE WB-1 Pre-Catalyzed Acrylic Water Based Epoxy, Semi-Gloss.
 - d. Pratt & Lambert Acrylic Waterborne Epoxy, Semi-Gloss.
 - e. Sherwin-Williams Pro Industrial Pre-Catalyzed Waterbased Epoxy, Semi-Gloss.
- E. Dry Fall: Metals; exposed structure and overhead-mounted services, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, and galvanized piping.
 1. Remove all shop/field applied markings/labels from steel surfaces.
 2. Field prime steel items that have shop/field applied markings/labels that can not be removed so that markings do not show through finished painted surfaces..
 3. One top coat, dry film thickness of 2.0 mil, minimum.
 4. Top Coat: Latex Dry Fall.
 - a. Products:
 - 1) Benjamin Moore Latex Dry Fall Flat 395.
 - 2) Diamond Vogel, Luminance 300 Latex Dri-Mist Flat.
 - 3) PPG Paints Speedhide Super Tech Water Based Interior Dry-Fog, 6-725XI, Flat. (MPI #118)
 - 4) Pratt & Lambert Waterborne Dry Fall, Flat.
 - 5) Sherwin-Williams Waterborne Acrylic Dryfall, Flat.
- F. Transparent Finish on Concrete Floors.
 1. 2 coats sealer.
 2. Sealer: Water Based for Concrete Floors.
 - a. Products:
 - 1) Tamms; Clearseal WB 300.
 - 2) L & M Construction Chemicals; Dress & Seal WB
 - 3) W.R. Meadows; VOCOMP - 25.

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. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop-applied primer for compatibility with subsequent cover materials.
- D. 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. Gypsum Wallboard: 12 percent.
 2. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

- A. Clean surfaces thoroughly and correct 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. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Concrete:
 - 1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
 - 2. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
- F. Masonry:
 - 1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
 - 2. Prepare surface as recommended by top coat manufacturer.
- G. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- H. Galvanized Surfaces:
 - 1. Prepare surface according to SSPC-SP 3.
- I. 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.
 - 4. Remove all shop/field applied markings/labels made with markers, wax pencils, paint, etc. Prime paint items with markings/labels that are still visible prior to finish painting.

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.
- 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. Include areas visible when permanent or built-in fixtures, grilles, convactor covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 - 1. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 2. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 - 3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 - 4. Finish doors on tops, bottoms, and side edges the same as exterior faces.
- F. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.

- G. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- H. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
- I. Sand wood and metal surfaces lightly between coats to achieve required finish.
- J. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- K. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.
- L. Concrete Floor Sealer: Follow manufacturer's instructions for preparation and installation.

3.04 INSPECTION

- A. Design Professional shall inspect final surfaces to confirm that they are properly painted. Surfaces that are not properly painted shall be prepared and re-painted until deemed properly painted. Properly painted surfaces are defined in Part 1 paragraph Quality Assurance.

3.05 TOUCH UP

- A. For touch-ups, use same application technique as original application. Use paint from same batch as original application, if possible.

3.06 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. At end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
- C. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting
- D. Provide "Wet Paint" signs to protect newly painted finishes.

3.07 PROTECTION

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 96 00
HIGH-PERFORMANCE COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. High performance coatings.
- B. Surface preparation.

1.02 REFERENCE STANDARDS

- A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual Current Edition.
- B. SSPC-SP 1 - Solvent Cleaning 2015, with Editorial Revision (2016).
- C. SSPC-SP 6 - Commercial Blast Cleaning 2007.

1.03 SUBMITTALS

- A. Product Data: Provide complete list of all 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. Cross-reference to specified coating system(s) product is to be used in; include description of each system.
 - 3. Manufacturer's installation instructions.
- B. Samples: Submit two samples 8 by 8 inch in size illustrating colors available for selection.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 - 1. Extra Coating Materials: 1 gallon of each type and color.
 - 2. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

1.04 QUALITY ASSURANCE

- A. Benchmark Samples (Mockups): Provide a full-coat benchmark finish sample for each type of coating and substrate required.
 - 1. Wall Surfaces: Provide samples on at least 100 sq. ft.
 - 2. Final approval of colors will be from benchmark samples.

1.05 MOCK-UPS

- A. Powder Coat Mockup: Powder Coat Provider shall provide mockup of one locker section. Mockup shall illustrate finish coating, in color selected for approval by Architect.
 - 1. Approve mockup shall remain as part of the finished work.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Coating Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

- A. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.
- B. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.
- C. Restrict traffic from area where coating is being applied or is curing.

1.08 WARRANTY

- A. Correct defective Work within a five year period after Date of Substantial Completion.
- B. Warranty: Include coverage for bond to substrate.

PART 2 PRODUCTS

2.01 HIGH-PERFORMANCE COATINGS

- A. 4-Step Paint Process: Provide at all exterior exposed steel and metal fabrications indicated.
 - 1. Surface Preparation: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Primer:
 - a. Benjamin Moore: COROTECH Epoxy Primer V150.
 - b. PPG Paints, Metal-Hide Zinc Rich primer, applied in shop.
 - c. Tnemec, Series 94-H2O Hydro-Zinc, zinc-rich primer, applied in shop.
 - d. S-W, Corothane I, GalvaPac Zinc Primer, applied in shop.
 - 3. Intermediate Coat:
 - a. Benjamin Moore: COROTECH Epoxy Mastic V 160.
 - b. PPG Paints, Pitt-Guard 95-245 HB Fast-Cure polyamide epoxy coating,
 - c. Tnemec, Series 27WB Typoxy, epoxy coating.
 - d. S-W, Macropoxy 646, epoxy-polamide coating.
 - 4. Finish Coat:
 - a. Benjamin Moore: COROTECH Aliphatic Acrylic Urethane Semi-Gloss V510.
 - b. PPG Paints, Pitt-Thane Ultra, 95-8000 Series, aliphatic polyurethane coating.
 - c. Tnemec, Series 1095 Endura-Shield, aliphatic acrylic polyurethane coating.
 - d. S-W, Acrolon 218, polyester modified, aliphatic, acrylic polyurethane.

2.02 ACCESSORY MATERIALS

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of coated surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Do not begin application of coatings until substrates have been properly prepared.
- C. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.
- D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

3.02 PREPARATION

- A. Clean surfaces of loose foreign matter.
- B. Remove substances that would bleed through finished coatings. If unremovable, seal surface with shellac.
- C. Remove finish hardware, fixture covers, and accessories and store.
- D. Ferrous Metal:
 - 1. Solvent clean according to SSPC-SP 1.
 - 2. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning", and protect from corrosion until coated.
- E. Protect adjacent surfaces and materials not receiving coating from spatter and overspray; mask if necessary to provide adequate protection. Repair damage.

3.03 PRIMING

- A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

3.04 COATING APPLICATION

- A. Apply coatings in accordance with manufacturer's written instructions, to thicknesses specified and recommendations in MPI - Architectural Painting and Specification Manual.
- B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.05 CLEANING

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Clean surfaces immediately of overspray, splatter, and excess material.
- C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.06 PROTECTION

- A. Protect finished work from damage.

END OF SECTION

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**SECTION 10 11 00
VISUAL DISPLAY UNITS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Markerboards

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Blocking and supports.

1.03 REFERENCE STANDARDS

- A. ASTM A424/A424M - Standard Specification for Steel, Sheet, for Porcelain Enameling 2018.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data on chalkboard, markerboard, tackboard, tackboard surface covering, trim, and accessories.
- C. Shop Drawings: Indicate wall elevations, dimensions, joint locations , special anchor details.
- D. Maintenance Data: Include data on regular cleaning, stain removal .

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 WARRANTY

- A. Provide five year warranty for chalkboard and markerboard to include warranty against discoloration due to cleaning, crazing or cracking, and staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Visual Display Boards:
 - 1. Best-Rite Manufacturing.
 - 2. Claridge Products and Equipment, Inc: www.claridgeproducts.com.
 - 3. Marsh Industries: www.marsh-ind.com.
 - 4. W. E. Nea Slate Company: www.nealslate.com.

2.02 VISUAL DISPLAY UNITS

- A. Markerboards: Porcelain enamel on steel, laminated to core.
 - 1. Size: As indicated on drawings.
 - 2. Frame: Extruded aluminum , with concealed fasteners.
 - 3. Frame Profile: 1-1/2 inch wide, rectangular trim.
 - 4. Frame Finish: Anodized, natural.
 - 5. Accessories: Provide marker tray and map rail.

2.03 MATERIALS

- A. Porcelain Enameled Steel Sheet: ASTM A424/A424M, Type I, Commercial Steel, with fired-on vitreous finish.

2.04 ACCESSORIES

- A. Map Rail: Extruded aluminum, manufacturer's standard profile, with cork insert and runners for accessories; 1 inch wide overall , full width of frame.
- B. Marker Tray: Aluminum, manufacturer's standard profile, one piece full length of markerboard, molded ends, concealed fasteners, same finish as frame.
- C. Mounting Brackets: Concealed.

- D. Marker Sets: Provide a four (4) marker set (blue, red, green, black) and a dry eraser for each room where marker boards are installed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.

3.02 INSTALLATION

- A. Install boards in accordance with manufacturer's instructions.
- B. Install visual display surfaces in locations and at mounting heights indicated on Drawings.
- C. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches o.c. Secure both top and bottom of boards to walls.
- D. Secure units level and plumb.

3.03 CLEANING

- A. Clean board surfaces in accordance with manufacturer's instructions.

END OF SECTION

**SECTION 10 14 00
SIGNAGE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Room and door signs.

1.02 REFERENCE STANDARDS

- 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.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- B. Shop Drawings: Indicate materials, assembly details, and attachment method for cabinet signs.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
 - 1. 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.
 - 2. Submit for approval by Owner through Architect prior to fabrication.
- D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
- E. Verification Samples: Submit samples showing colors specified.
- F. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.

1.06 FIELD CONDITIONS

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. ASI Sign systems, Inc: 1219 Zimmerman Dr, Grinnell, IA 50112; Telephone: (641) 236-6616; Website: www.asisignage.com.
 - 2. CR Signs, 4701 1st Ave SE, Cedar Rapids, Ia 52402; Telephone: (319) 826-3608; Website: www.crsignsinc.com.
 - 3. Nesper Sign Advertising, Inc: 4620 J Street SW, Cedar Rapids, IA 52404; Telephone: (319) 366-5312; Website: www.nespersign.com.
 - 4. Substitutions: See Section 01 25 00 - Substitution Procedures, for additional requirements.

2.02 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to 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 comprehensive and specific requirements.
- B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas; refer to Drawings for schedule.
 - 1. Sign Type: Flat signs with applied character panel media as specified.
 - 2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
 - 3. Character Height: As indicated on Drawings.
 - 4. Sign Sizes: As indicated on Drawings.
 - 5. Office Doors: Identify with room names and numbers to be determined later, not those indicated on Drawings; in addition, provide "window" section for replaceable occupant name.
 - 6. Conference and Meeting Rooms: Identify with room names and numbers to be determined later, not those indicated on Drawings.
 - 7. Service Rooms: Identify with room names and numbers to be determined later, not those indicated on Drawings.
 - 8. Rest Rooms: Identify with pictograms, the room names (e.g., "MEN", "WOMEN"), room numbers to be determined later, and braille.
- C. Interior Directional and Informational Signs:
 - 1. Sign Type: Same as room and door signs.
 - 2. Sizes: As indicated on Drawings.
 - 3. Message Schedule: Refer to Drawings for wording of signs.

2.03 SIGN TYPES

- A. Flat Signs: Signage media without frame.
 - 1. Material: Acrylic plastic.
 - 2. Edges: Square.
 - 3. Corners: Square.
 - 4. Clear Cover: For customer produced sign media, provide clear cover of polycarbonate plastic, glossy on back, non-glare on front.
 - 5. Wall Mounting of One-Sided Signs: Tape adhesive.
 - 6. Glass Mounting of One-Sided Signs: Tape adhesive; provide blank panel of same size and material as sign for mounting on opposite side of glass.
- B. Colors and Fonts:
 - 1. Character Fonts: As scheduled on Drawings.
 - 2. Character Cases: As scheduled on Drawings.
 - 3. Background Colors: As scheduled on Drawings.
 - 4. Character Colors: Contrasting color.

2.04 TACTILE SIGNAGE MEDIA

- A. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.
 - 1. Panel Thickness: As indicated on Drawings.
 - 2. Letter Thickness: 3/32 inch inch.
 - 3. Letter Edges: Square.

2.05 DIMENSIONAL LETTERS

- A. Metal Letters:
 - 1. Metal: Aluminum casting.
 - 2. Metal Thickness: 1/8 inch minimum, or as otherwise indicated on drawings.
 - 3. Letter Height: As indicated on Drawings.
 - 4. Text and Typeface:
 - a. Character Font: As indicated on Drawings.

5. Finish: Powdercoat
6. Color: As selected by Architect from manufacturer's full range.
7. Mounting: Concealed screws.

2.06 ACCESSORIES

- A. Concealed Screws: Stainless steel, galvanized steel, chrome plated, or other non-corroding metal.
- B. Tape Adhesive: Double-sided tape, permanent adhesive.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Locate signs and mount at heights indicated on Drawings.
- D. Locate signs and mount at heights indicated on Drawings, and in accordance with ADA Standards and ICC A117.1.
- E. Protect from damage until Substantial Completion; repair or replace damaged items.

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 SUBMITTALS

- A. Product Data: Manufacturer's product literature for each type of dimensional letter sign, indicating style, font, colors, locations, and overall dimensions of each sign.
- B. Shop Drawings:
 - 1. Include dimensions, locations, elevations, materials, text and graphic layout, and attachment details.
- C. Selection Samples: Where materials, colors, and finishes are not specified, submit two sets of selection charts or chips.
- D. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Package dimensional letter signs as required to prevent damage before installation.

PART 2 PRODUCTS

2.01 DIMENSIONAL LETTERS

- A. Metal Letters:
 - 1. Material: Aluminum casting.
 - 2. Thickness: As indicated on drawings.
 - 3. Letter Height: As indicated on drawings.
 - 4. Text and Typeface:
 - a. Character Font: As indicated on drawings.
 - 5. Finish: Powdercoat.
 - 6. Color: As selected.
 - 7. Mounting: Concealed screws.

2.02 ACCESSORIES

- A. Concealed Screws: Noncorroding metal; stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.
- B. Notify Architect if conditions are not suitable for installation of signs; do not proceed until conditions are satisfactory.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install with horizontal edges level.

END OF SECTION

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SECTION 10 21 13.19
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Solid plastic toilet compartments.
- B. Urinal and vestibule screens.
- C. Urinal screens.

1.02 REFERENCE STANDARDS

- A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2023.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.04 DELEGATED DESIGN

- A. Framing and Supports for Ceiling Hung Partition: Provider of work of this section is responsible for providing design, fabrication and installation of framing and supports for ceiling hung partitions. This includes structural design provided by a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located. Design for framing and supports shall additionally comply with requirements of Section 05 50 00 - Metal Fabrications.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on panel construction, hardware, and accessories.
- C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
- D. Design Data: Design calculations, bearing seal and signature of structural engineer licensed to practice in the State in which the Project is located, showing loads at points of attachment to the building structure and design for framing and supports for ceiling hung partitions.
- E. Samples: Submit two samples of partition panels, 6x6 inch in size illustrating panel finish, color, and sheen.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Solid Plastic Toilet Compartments:
 - 1. ASI Global Partitions: www.asi-globalpartitions.com/#sle.
 - 2. Scranton Products (Santana/Comtec/Capital): www.scrantonproducts.com.

2.02 PLASTIC TOILET COMPARTMENTS

- A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), ceiling-hung.
 - 1. Color: See drawings for interior Finish Specs.
- B. Doors:
 - 1. Thickness: 1 inch.
 - 2. Width: 24 inch.
 - 3. Width for Handicapped Use: 36 inch, out-swinging.
 - 4. Height: 55 inch.
 - 5. Door & Pilaster Edge at Latch Side of Doors: Shiplap.
- C. Panels:

1. Thickness: 1 inch.
 2. Height: 55 inch.
- D. Pilasters:
1. Thickness: 1 inch.
 2. Width: As required to fit space; minimum 3 inch.
- E. Screens: Without doors; to match compartments; mounted to wall with two panel brackets.

2.03 ACCESSORIES

- A. Pilaster Shoes: Stainless steel, satin finish, 3 inches high; concealing floor fastenings.
- B. Wall and Pilaster Brackets: Stainless steel; continuous type.
- C. Head Rails: Hollow stainless steel tube, 1 x 1-5/8 inch size, with cast socket wall brackets.
- D. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.
- E. Hinges: Stainless steel, manufacturer's standard finish.
1. Continuous-type hinge, self closing.
- F. Door Hardware: Stainless steel, manufacturer's standard finish.
1. Door Latch: Slide type with exterior emergency access feature.
 2. Door Strike and Keeper with Rubber Bumper: Mount on pilaster in alignment with door latch.
 3. Provide door pull for outswinging doors.
- G. Coat Hook: One per compartment, mounted on door.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as indicated.
- B. Verify correct spacing of and between plumbing fixtures.
- C. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION

- A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
- B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.
- C. Attach panel brackets securely to walls using anchor devices.
- D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.
- E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new 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 hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.
- B. Adjust adjacent components for consistency of line or plane.

END OF SECTION

**SECTION 10 22 12
WIRE MESH PARTITIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wire mesh partitions for:
 - 1. Storage compartments.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's printed data on products to be furnished.
- B. Shop Drawings: Indicate plan and vertical dimensions, elevations, component details; head, jamb, and sill details; location of hardware. Provide component details, anchorage, and type and location of fasteners.
- C. Samples: Finish color samples for selection.
- D. Keys: Turn over keys for door locks to Owner at completion of project.

1.03 QUALITY ASSURANCE

- A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and no more than 12 months before start of scheduled welding work.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Basis-of-Design: WireCrafters, www.wirecrafters.com.
- B. Substitutions: See Section 01 25 00 – Substitution Procedures.

2.02 PARTITIONS

- A. Wire Mesh Partitions: Factory-assembled modular sized panels stacked between post uprights, complete with all components, accessories, hardware, and fasteners; interchangeable units that allow expansion without waste of components.
 - 1. Design Criteria: Design partition system to provide for movement of components without damage, undue stress on fasteners or other detrimental effects, when subject to design loads.
 - 2. Style: Full mesh.
 - 3. Provide fixed sections unless otherwise indicated.
 - 4. Post Spacing: As required to suit dimensions, using manufacturer's standard panel widths.
 - 5. Provide adjustable width sheet metal panels to achieve horizontal partition dimensions indicated up to 40 foot high partition.
 - 6. Provide special panels of same construction as adjacent panels to achieve horizontal partition dimensions indicated.
 - 7. Panel frames bolted together and to posts.
 - 8. Height: As indicated on drawings.
 - 9. Toe Space - Industrial Barriers: 12 inch high open space below bottom panel.
 - 10. Provide ceiling panels where indicated.
- B. Posts: Square 2 by 2 inch 14 gauge steel tube.
 - 1. Factory drilled holes for attaching panels.
 - 2. Welded-on base plate, 2 by 7 by 1/4 inch, with factory drilled holes for floor anchors.
 - 3. Decorative plastic post cap.
 - 4. Corner Posts: Same as in-line posts.
 - 5. Provide appropriate hardware for attaching panels to posts and posts to floor.
- C. Wire Mesh Panels: Steel angle frames with wire mesh securely welded in place; frame joints coped at corner and securely welded; factory drilled holes for fasteners.
 - 1. Wire Mesh: 8 gauge, 0.162 inch steel wire woven into 1-1/2 inch square mesh.
 - 2. Frame: 1-1/2 by 1-1/2 by 1/8 inch hot rolled steel angle.

3. Vertical Panel Stiffeners: 1/4 by 3/4 inch steel bar securely welded to frame behind mesh on panels 4 feet or wider.
 4. Ceiling Panels: Same as wall panels; provide supplemental support where required by span.
- D. Solid Wainscot Panels: 16 gauge steel sheet welded in same mesh panel frames.
- E. Door Sections: Matching wire mesh panels.
1. Frame: 1-1/2 by 1-1/2 by 1/8 inch hot rolled steel angle.
 2. Stiffeners: Two horizontal and one vertical stiffener of 1/4 by 3/4 inch flat hot rolled steel bar.
 3. Hinged Doors:
 - a. Single Door Width: 36 inches.
 - b. Double Door Width: 72 inches.
 - c. Door Opening Height: 87-1/4 inches, with transom of similar construction to full height of partition.
 - d. Hinges: 3 5-knuckle tight-pin butt hinges fastened to door panel and frame.
 4. Locking: Mortise cylinder lock operated by key outside, lever handle inside.

2.03 FABRICATION

- A. Fit and assemble in largest practical sections for delivery to site, ready for installation.
- B. Make exposed joints flush or tight.
- C. Provide components required for anchorage to adjacent construction.
- D. Frame openings made for penetrating mechanical and electrical components.

2.04 FINISH

- A. Provide manufacturer's standard electrostatic sprayed enamel on all wire partition components. Color to be selected by Architect from manufacturer's full range.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install plumb, level, and securely anchored to floor and to other structural members where indicated.
- C. Adjust doors for smooth, easy operation.

3.02 TOLERANCES

- A. Maximum Variation From Plumb or Level: 1/4 inch.
- B. Maximum Misalignment From True Position: 1/4 inch.

END OF SECTION

**SECTION 10 22 39.13
FOLDING GLASS-PANEL PARTITIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Interior aluminum-framed folding glass-panel partitions, horizontal opening.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood blocking and track support shimming.

1.03 REFERENCE STANDARDS

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2020.
- B. AAMA 1801 - Voluntary Specification for the Acoustical Rating of Exterior Windows, Doors, Skylights and Glazed Wall Sections 2021.
- C. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- D. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- E. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.
- 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 C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers 2005 (Reapproved 2019).
- I. ASTM D1187/D1187M - Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal 1997 (Reapproved 2018).
- J. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009 (Reapproved 2016).
- K. 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).
- L. ASTM E413 - Classification for Rating Sound Insulation 2022.
- M. ASTM E557 - Standard Guide for Architectural Design and Installation Practices for Sound Isolation Between Spaces Separated by Operable Partitions 2012 (Reapproved 2020).
- N. ASTM E1425 - Standard Practice for Determining the Acoustical Performance of Windows, Doors, Skylight, and Glazed Wall Systems 2014 (Reapproved 2023).
- O. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation 2019.

1.04 SUBMITTALS

- A. Product Data: Provide data on partition materials, operation, hardware and accessories, and colors and finishes available.
- B. Design Data: Design calculations bearing seal and signature of structural engineer licensed to practice in the State in which the Project is located, showing loads at points of attachment to the building structure.

- C. Shop Drawings: Indicate layout, dimensions, identification of components, and interface with adjacent construction.
 - 1. Include field measurements of openings.
 - 2. Include details of:
 - a. Requirements for support and bracing of overhead track.
 - b. Installation details.
 - c. Appearance of manufacturer-supplied door hardware and fittings.
- D. Selection Samples: Two sets, representing manufacturer's full range of available metal and glass materials and finishes.
- E. Certificates: Certify that partition system meets or exceeds specified acoustic requirements.
- F. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

1.05 QUALITY ASSURANCE

- A. Sound Transmission Class (STC): As indicated, calculated in accordance with ASTM E413, based on tests performed in accordance with ASTM E90, on panel size of 100 sq ft.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until installation.

1.07 WARRANTY

- A. Manufacturer Warranty: Provide Folding Glass Partition system manufacturer's standard limited warranty as per manufacturer's published warranty document in force at time of purchase, subject to change, against defects in materials and workmanship beginning Date of Substantial Completion.
 - 1. Rollers and Glass Seal Failure: Ten (10) years.
 - 2. All Other Components: Ten (10) years.

PART 2 PRODUCTS

2.01 INTERIOR FOLDING GLASS-PANEL PARTITIONS - HORIZONTAL OPENING

- A. Basis of Design: NanaWall Systems, Inc; NW Acoustical 645 Thermally Broken Aluminum-Framed Folding Glass-Panel System: www.nanawall.com.
 - 1. Substitutions: See Section 01 25 00 - Substitution Procedures.
 - 2. Folding Glass-Panel Partitions: Floor mounted, factory fabricated assemblies consisting of full-width aluminum-framed glass panels; complete with support and anchorage devices.
 - a. Design to withstand normal operation without damage, racking, sagging, or deflection.
 - b. Prepare for specified hardware whether specified in this section or not.
 - c. Protect finished metal surfaces with strippable film.
 - d. Factory assemble to greatest extent practicable; may be disassembled to accommodate shipping constraints.
 - 3. Performance Criteria:
 - a. Acoustical Performance: Provide folding glass-panel partition assemblies tested by qualified testing agency in accordance with ASTM E90, ASTM E1425, or AAMA 1801.
 - 1) Sound Transmission Class (STC) Rating: STC of 45, minimum, calculated in accordance with ASTM E413.
 - b. Structural Performance: No glazing material breakage or permanent damage to fasteners, anchors, hardware, or actuating mechanisms, when tested in accordance with ASTM E330/E330M.
 - 1) Installed partition system track capable of supporting imposed loads, with maximum deflection of 1/360 of span.

4. Configuration: Inward and outward opening, as indicated on drawings; bifolding panels hinged to side jamb; stacking as indicated on drawings, with locking swing panel hinged to side jamb where shown on drawings.
5. Glazed Aluminum-Framed Panel Construction:
 - a. Aluminum Frames: Factory finished; manufacturer's standard corner construction; thermally broken.
 - 1) Panels: Single lite.
 - 2) Panel Size: As indicated on drawings.
 - b. Aluminum Frame Finish: Powder coating in accordance with AAMA 2604.
 - c. Insulated Glass Unit (IGU) Thickness: 1-9/16 inch.
 - 1) Glass Spacers: Manufacturer's standard gray finish.
 - d. Glass: Standard reduced iron.
6. Sliding-Folding Hardware: Manufacturer's standard combination sliding and folding hardware with top and bottom tracks.
7. Overhead Track: Extruded aluminum box track, factory fabricated; corner, intersection, and hanger access fittings to suit partition movement and stacking indicated; track joints reinforced with stainless steel junction plates.
 - a. Track Suspension System: Provide brackets, hanger rods, and hardware for attachment to structure, with at least 6-inch vertical adjustment range and capable of adjustments without removing panels from tracks.
8. Track Hangers: 4-wheeled, ball-bearing, stainless steel rollers on vertical axles; two per panel; providing smooth movement and directional control, and preventing accidental panel rotation.
9. Sill Type: ADA-compliant flush sill with high heel protector insert, with sealant, shims and fasteners at necessary locations.
 - a. Finish: To match the panel frame.
10. Operable Panel Hardware:
 - a. On Panel Runs with Operable Swing Door: Multi-point locking with latch, deadbolt and lever handles on both sides on swing panel.
 - b. On Panel Runs without Operable Swing Door: Two point locking with flat handle on inside only.
11. Panel Hinges:
 - a. Clear anodized aluminum with stainless-steel security hinge pins with setscrews.
12. Convertible Door Panel Fittings and Hardware:
 - a. Top and bottom pivots concealed in full width top and bottom rails.
13. Acoustic Seals: Provide acoustic seals in accordance with project requirements.

2.02 MATERIALS

- A. Glazing:
 1. Insulating Glass Units (IGU): Hermetically sealed double pane units, 1/4 inch thick lights, clear, low iron float glass panes, unit thickness as indicated; certified by independent testing agency to comply with ASTM E2190.
 2. Setting Blocks: Manufacturer's standard type; complying with ASTM C864.
- B. Aluminum Components: Complying with ASTM B221 (ASTM B221M), alloy 6063, temper as indicated, with anodized finish complying with AAMA 611, and powder coating complying with AAMA 2603 or AAMA 2604 for select colors.

2.03 ACCESSORIES

- A. Anchors: Hot-dipped galvanized or stainless steel in accordance with project and manufacturer's installation requirements.
- B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M, Type I.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify track supports are laterally braced and will permit track to be level within 1/4 inch of required position and parallel to the floor surface.
- B. Verify floor flatness of 1/8 inch in 10 feet, non-cumulative.
- C. Do not begin installation until supports and adjacent substrates have been properly prepared.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean substrates thoroughly prior to installation.
- B. Prepare substrates using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

- A. Install partition in accordance with manufacturer's instructions and ASTM E557.
- B. Fit and align partition assembly and pocket doors level and plumb.

3.04 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work.
- B. Maximum Variation from Plumb: 1/16 inch.
- C. Maximum Variation from Level: 1/16 inch.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 feet straight edge.

3.05 ADJUSTING

- A. Adjust partition assembly to provide smooth operation from stacked to full open position. Do not over-compress acoustic seals.

3.06 CLEANING

- A. Thoroughly clean surfaces and materials installed as part of this work.
 - 1. Remove protective material from factory finished surfaces.
 - 2. Remove labels and visible markings.
 - 3. Wash surfaces by method recommended and acceptable to manufacturer; rinse and wipe surfaces clean.

3.07 CLOSEOUT ACTIVITIES

- A. Demonstrate operation of partition and identify potential operational problems.

3.08 PROTECTION

- A. Protect installed products and materials until Date of Substantial Completion.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 10 23 11
GLAZED INTERIOR WALL ASSEMBLIES

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes:
 - 1. Interior glass sidelites.

1.02 SUBMITTALS

- A. Product Data: Submit Manufacturer's product data for all glass entrance systems
 - 1. including:
 - 2. Manufacturer's standard details and fabrication method.
 - 3. Data on finishing, hardware and accessories.
 - 4. Recommendations for maintenance and cleaning of exterior finish surfaces.
 - 5. Test data on fabricated door.
- B. Shop drawings for each all glass entrance system are required, including:
 - 1. Layout and installation details.
 - 2. Elevations at 1/4-inch scale.
 - 3. Detail sections of fittings.
 - 4. Hardware mounting heights.
 - 5. Anchorage and reinforcement.
 - 6. Glazing details.
- C. Samples for approval:
 - 1. Submit pairs of samples of each specified metal color and finish on 9-inch long sections of extrusions or formed shapes.
 - 2. Submit samples of glass approximately 6 inches square showing the edge conditions.

1.03 QUALITY ASSURANCE

- A. Installer qualifications: Engage an experienced installer who has completed installations of all
- B. glass entrances similar in design and extent to those required for the project and whose work has resulted in construction with a record of successful in service performance.
- C. Manufacturer's qualifications: Provide all glass entrances produced by a firm experienced in manufacturing entrance systems that are similar to those indicated for this project and that have a record of successful in service performance. All door patch systems must be tested.
- D. Single source responsibility: Obtain all glass entrance systems from a single manufacturer, to ensure full compatibility and warranty of parts.
- E. Design criteria: The drawings indicate the size, profile and dimensional requirements of the all glass entrance system required and are based on the specific types and models indicated. All glass entrances by other manufacturers may be considered, provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.
- F. Safety glass standard: Provide tempered glass components that comply with ANSI Z97.1 and testing requirements of CPSC 16 CFR 1201 Category II.
- G. Testing criteria for Door Patches: The door patch must be tested to perform at least 250,000 cycles without any failures.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all glass entrances and related components in the manufacturer's original protective packaging. Do not deliver entrance units until the work is ready for their installation.
 - 1. Inspect components for damage upon delivery. Unless minor defects in metal components can be made to meet the Architect's specifications and satisfaction, damaged parts should be removed and replaced.

1.05 PROJECT CONDITIONS

- A. Field Measurements: Check opening by accurate field measurement before fabrication.
 - 1. Show recorder measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of the work and possible damage to the finished product.
 - 2. Where necessary, proceed with fabrication without measurement and coordinate fabrication tolerances to insure proper fit.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER'S

- A. Basis of Design: Clear View "All-Glass" Entrance Door System featuring heavy tempered glass secured to a CRL Patch Hardware System, manufactured by C.R. Laurence Co., Inc. (CRL)
- B. Substitutions: See Section 01 25 00 – Substitution Procedures.

2.02 MATERIALS

- A. Glass: Clear, tempered glass as specified in Section 08 80 00 - Glazing.
 - 1. Thickness: 9/16 inch, or as otherwise required for structural loads.
 - 2. Edge treatment: Provide machine ground and polished edges for exposed glass edges of doors and sidelites and flat ground edges for butting glass edges.
- B. Fittings, General: Provide CRL North American Door Patch Fittings in required profile, size and glass thickness as selected by the Architect. Comply with requirements indicated for kind and form of metal finish.
 - 1. Aluminum: Provide fittings fabricated from aluminum of alloy and temper recommended by manufacturer for use intended and required for application of finish indicated, but not less than strength and durability properties specified in ASTM B 221 for 6063-T5.
- C. Door Patch Systems: Provide door patch systems matching metal and finish of door fittings. The system shall include, but not limited to, door patches, rails, vertical stiles, center locks, and strike housings. Comply with GANA guidelines, and hardware manufacturer requirements for size restrictions. System shall include, but not limited to, inserts, covers, and preparation.
 - 1. Profile: Rectangular.
- D. Accessory Fittings: Provide manufacturer's standard accessory fittings of the type indicated. Comply with requirements indicated for kind and form of metal and finish of door fittings.
 - 1. Overhead Door Stop: Provide overhead door stop systems.
 - 2. Sidelite Systems: Provide sidelite systems matching metal and finish of door fittings.
- E. Anchors and Fasteners: Manufacturer's standard concealed anchors and fastenings. Do not use exposed fasteners.

2.03 HARDWARE

- A. General: Provide heavy-duty hardware units as indicated, scheduled or required for operation of each type of door, including the following items of sizes, numbers and type recommended by the manufacturer for the type of service required. Provide metal and finish for exposed parts to match the finish of the door patches.
- B. Push-Pull Set: Provide handles selected by the Architect and supplied by C.R. Laurence.
- C. Cylinder Locks: Supplied as described under Division 8 section, for keying into building system.

2.04 FABRICATION

- A. General: Fabricate all glass entrance components to designs and sizes indicated. Size of door and profile requirements of fittings and hardware are indicated on the drawings.
 - 1. Locate and provide holes and cutouts in glass to receive hardware before tempering glass. Do not permit cutting, drilling or other alterations to glass after tempering.
 - 2. Fabricate work to accommodate required fittings, hardware, anchors, reinforcement, and accessory items.

- B. Prefabrications: Complete fabrication, assembly, finishing, hardware application and other work to the greatest extent possible before shipment to the project site. Disassemble components only as necessary for shipment and installation.
- C. Continuity: Maintain accurate relation of planes and angles with hairline fit of contracting members.

2.05 METAL FINISHES

- A. Patch Fittings
 - 1. US-32D Brushed Stainless Steel Clad
- B. Beretta Series Patch Fittings
 - 1. Brushed Nickel

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine substrates and supports with the installer, present for compliance with requirements indicated, installation tolerances and other conditions that affect the installation of all glass entrances and storefronts. Correct unsatisfactory conditions before proceeding with the installation.
 - 1. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 INSTALLATION

- A. Install all glass entrance door and associated components in accordance with manufacturer's printed instructions and recommendations.
 - 1. Verify units level, plumb and true line.
 - 2. Lubricate hardware and other moving parts.

3.03 ADJUSTING

- A. Adjust doors and hardware to provide a tight fit at meeting.
- B. Hardware: Adjust operating hardware to ensure proper operation. Set, seal, and grout floor closer cases. Coordinate cylinder installation.

3.04 CLEANING

- A. Clean door and patch surfaces after installation, exercising care to avoid damage to the finish.
- B. Clean glass surfaces after installation, complying with requirements contained in the "Glass and Glazing" section for cleaning and maintenance. Remove excess glazing sealant compounds, dirt or other substances.

3.05 PROTECTION

- A. Institute protective measures required throughout the remainder of the construction period to ensure that the all glass entrances do not incur any damage or deterioration, other than normal weathering, at the time of acceptance.

END OF SECTION

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**SECTION 10 26 00
CORNER GUARDS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Corner guards.

1.02 SUBMITTALS

- A. Product Data: Indicate physical dimensions, features, wall mounting brackets with mounted measurements, anchorage details, and rough-in measurements.
- B. Shop Drawings: Include plans, elevation, sections, and attachment details. Show design and spacing of supports for protective corridor handrails, required to withstand structural loads.
- C. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.
 - 1. Submit two sections of corner guards, 24 inches long.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.
- B. Protect work from moisture damage.
- C. Do not deliver products to project site until areas for storage and installation are fully enclosed, and interior temperature and humidity are in compliance with manufacturer's recommendations for each type of item.

PART 2 PRODUCTS

2.01 PRODUCT TYPES

- A. Corner Guards - Flush Mounted:
 - 1. Width of Wings: 2 inches.
 - 2. Corner: Square.
 - 3. Color: As selected from manufacturer's standard colors.
 - 4. Length: One piece.
 - 5. Products:
 - a. Construction Specialties, Inc., SFS-20 Corner Guard: www.c-sgroup.com.
 - b. Inpro, 160F Flush Mount Corner Guard: www.inprocorp.com.
 - c. Koroseal Interior Products, CGVR2S Corner Guard: www.koroseal.com.
- B. Corner Guards - Surface Mounted:
 - 1. Material: Type 304 stainless steel, No. 4 finish.
 - 2. Width of Wings: 1 inc.
 - 3. Corner: Square.
 - 4. Length: One piece.
 - 5. Products:
 - a. Construction Specialties, Inc., Stainless Steel Corner Guard: www.c-sgroup.com.
 - b. Inpro, Stainless Steel Corner Guard: www.inprocorp.com.
 - c. Koroseal Interior Products, Stainless Steel Corner Guard: www.koroseal.com.

2.02 FABRICATION

- A. Fabricate components with tight joints, corners and seams.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.

3.02 INSTALLATION

- A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.

3.03 CLEANING

- A. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

END OF SECTION

**SECTION 10 28 00
TOILET ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Commercial toilet accessories.
- B. Diaper changing stations.
- C. Utility room accessories.

1.02 REFERENCE STANDARDS

- A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2023.
- B. ASTM C1036 - Standard Specification for Flat Glass 2021.
- C. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror 2018.
- D. ASTM F2285 - Standard Consumer Safety Performance Specification for Diaper Changing Tables for Commercial Use 2022.

1.03 SUBMITTALS

- A. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- B. Samples: Submit two samples of each accessory, illustrating color and finish.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
- B. Stainless Steel Sheet: ASTM A666, Type 304.
- C. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- D. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

2.02 FINISHES

- A. Stainless Steel: Satin finish, unless otherwise noted.

2.03 COMMERCIAL TOILET ACCESSORIES

- A. Toilet Paper Dispenser: Roll-in-reserve type, designed to allow automatic activation of reserve roll when needed, or manual activation by pressing release bar, surface-mounted, stainless steel unit with pivot hinge, tumbler lock.
 - 1. Basis-of-Design Product: B-2888 Surface-Mounted Multi Roll Toilet Tissue Dispenser.
- B. Combination Towel Dispenser/Waste Receptacle: Recessed with projecting waste receptacle and automatic roll paper towel dispenser, stainless steel; seamless wall flanges, continuous piano hinges, satin finish.
 - 1. Towel dispenser capacity: 8" diameter rolls.
 - 2. Waste receptacle capacity: 18 gallons.
 - 3. Provide accessories as required for hardwired power.
 - 4. Basis-of-Design Products: Bobrick, B-39747 Recessed Convertible Automatic, Universal Roll Towel Dispenser/Waste Receptacle.
- C. Automated Soap Dispenser: Foam soap dispenser, wall-mounted, with stainless steel cover and window to gauge soap level.
 - 1. Minimum Capacity: 27 ounces.
 - 2. Basis-of-Design: Bobrick, B-2013 Automatic Wall-Mounted Foam Soap Dispenser.

- D. Automated Hand Sanitizer Dispenser: Sanitizer dispenser, wall-mounted, with stainless steel cover and window to gauge soap level.
 - 1. Minimum Capacity: 27 ounces.
 - 2. Basis-of-Design: Bobrick, B-2013 Automatic Wall-Mounted Foam Soap Dispenser.
- E. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
 - 1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
 - 2. Size: As indicated on drawings.
 - 3. Frame: 0.05 inch angle shapes, with mitered corners, and tamperproof hanging system; satin finish.
 - 4. Basis-of-Design Product: Bobrick, B-165 Mirror.
- F. Grab Bars: Stainless steel, nonslip grasping surface finish.
 - 1. Standard Duty Grab Bars:
 - a. Push/Pull Point Load: 250 pound-force, minimum.
 - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
 - c. Length and Configuration: As indicated on drawings.
 - d. Basis-of-Design Product: Bobrick, B-6806 1-1/2" Diameter Straight Grab Bar.
- G. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted.
 - 1. Basis-of-Design Product: Bobrick, B-35139 Trimline Surface Mounted Sanitary Napkin Disposal

2.04 ELECTRIC HAND/HAIR DRYERS

2.05 DIAPER CHANGING STATIONS

- A. Vertical Diaper Changing Station: Wall-mounted folding diaper changing station for use in commercial toilet facilities, meeting or exceeding ASTM F2285.
 - 1. Material: Stainless steel.
 - 2. Mounting: Surface.
 - 3. Color: Gray.
 - 4. Minimum Rated Load: 250 pounds.
 - 5. Basis-of-Design Products: Bobrick, KB301-01SS Stainless Steel Veneer Vertical Baby Changing Station.
- B. Horizontal Diaper Changing Station: Wall-mounted folding diaper changing station for use in commercial toilet facilities, meeting or exceeding ASTM F2285.
 - 1. Material: Stainless steel.
 - 2. Mounting: Surface.
 - 3. Color: Gray.
 - 4. Minimum Rated Load: 250 pounds.
 - 5. Basis-of-Design Products: Bobrick, KB200-01SS Horizontal Wall Mounted Baby Changing Station.

2.06 UTILITY ROOM ACCESSORIES

- A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
 - 1. Hooks: 4, 0.06 inch stainless steel rag hooks at shelf front.
 - 2. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.
 - 3. Length: 34 inches.
 - 4. Basis-of-Design Product: Bobrick, B-239 Utility Shelf with Mop/Broom Holders and Hooks.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.

- B. Verify exact location of accessories for installation.

3.02 PREPARATION

- A. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturer's instructions in locations indicated on the drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated on drawings.

3.04 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

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**SECTION 10 44 00
FIRE PROTECTION SPECIALTIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

1.02 REFERENCE STANDARDS

- A. NFPA 10 - Standard for Portable Fire Extinguishers 2022.

1.03 QUALITY ASSURANCE

- A. Confirm keying for emergency key cabinet with fire department having jurisdiction prior to final purchase of unit.

1.04 SUBMITTALS

- A. Product Data: Provide extinguisher operational features.
- B. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.
- C. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- D. Maintenance Data: Include test, refill or recharge schedules and 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 Extinguisher, Cabinets and Accessories:
 - 1. Activar Construction Products Group: www.activarcpg.com/#sle.
 - 2. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 3. Potter-Roemer: www.potterroemer.com.

2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
 - 1. Class: A:B:C type.
 - 2. Size: 5 pound.
 - 3. Finish: Baked polyester powder coat, color as selected.

2.03 FIRE EXTINGUISHER CABINETS

- A. Cabinet Configuration: Semi-recessed type.
 - 1. Size to accommodate accessories.
 - 2. Trim: Rolled return, with 2-1/2 inch projection.
- B. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinge.
- C. Door Glazing: Full lite, tempered glass, clear, 1/8 inch thick, and set in resilient channel glazing gasket.
- D. Finish of Cabinet Exterior Trim and Door: No. 4 - Brushed stainless steel.
- E. Finish of Cabinet Interior: White colored enamel.

2.04 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.

2.05 EMERGENCY KEY CABINET

- A. Fire department emergency access key cabinet ("Knox Box"): Model 3200-R, Knox Rapid Entry System Box, high security heavy duty, medium capacity (10 keys), recessed mounted with optional recessed masonry mounting kit, as manufactured by The Knox Company, Irvine, CA, (800) 552-5669, having the following construction.
 - 1. Housing: 1/4 inch thick plate steel with joints welded.
 - 2. Door: 1/2 inch thick steel plate with neoprene weather seal.
 - 3. Locking: 3 point lock with stainless steel lock cover.
 - 4. Finish: Black colored polyester powder coat.
 - 5. Mounting: Height as indicated on drawings.
 - 6. Provide mounting kit as required for installation in wall surface material.
 - 7. Confirm keying with fire department having jurisdiction prior to purchase.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Secure rigidly in place.
- C. Place extinguishers in cabinets.
- D. Install emergency key cabinets per manufacturer's written instructions and as approved by fire department having jurisdiction.

END OF SECTION

**SECTION 10 51 29
PHENOLIC LOCKERS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Phenolic lockers.
- B. ADA changing bench.

1.02 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.
- B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

1.03 SUBMITTALS

- A. Product Data: Manufacturer's published data on locker construction, sizes and accessories.
- B. Shop Drawings: Indicate locker plan layout, numbering plan and combination lock code.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Protect locker finish and adjacent surfaces from damage.

PART 2 PRODUCTS

2.01 LOCKERS

- A. Lockers: Phenolic lockers, wall mounted with matching closed base.
 - 1. Width: 15 inches.
 - 2. Depth: 15 inches.
 - 3. Height: 72 inches.
 - 4. Locker Configuration: Three tier.
 - 5. Fittings: Size and configuration as indicated on drawings.
 - 6. Locking: Built in keyless locks.
 - 7. Basis-of-Design: Hollman, Phenolic Model C1 Lockers.
 - a. Substitutions: See Section 01 25 00 - Substitution Procedures.
- B. ADA Changing Benches: Wall mounted, stationary type; bench top of wood; painted steel pedestals.
 - 1. Accessibility: Comply with ICC A117.1 and ADA Standards.
 - 2. Size: 42 x 20 inches.
 - 3. Locker Bench Support Brackets: Welded structural steel wall surface mount bench support brackets; pre-drilled for bench top material attachment and for wall anchorage.
 - a. Finish: Powdercoat, color to be selected from manufacturer's standard colors.
 - b. Bracket-to-Wall Attachment: Provide fasteners/anchors recommended by bracket manufacturer for wall construction conditions encountered.
 - 4. Products:
 - a. WB Manufacturing LLC, Hardwood Locker Bench Seat LBS20072 and Wall Brackets BKT1218.
 - b. Robinson Steel Company, ADA Wall Mounted Locker Room Bench ADAWMB.
 - c. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.02 PHENOLIC LOCKERS

- A. Lockers: Factory assembled, made of phenolic core panels with stainless steel mechanical joint fasteners; fully finished inside and out; each locker capable of standing alone.
 - 1. Doors: Full overlay, covering full width and height of locker body; square edges.
 - 2. Panel Core Exposed at Edges: Machine polished, without chips or tool marks; square edge unless otherwise indicated.

3. Where locker ends or sides are exposed, finish the same as fronts or provide extra panels to match fronts.
 4. Door Color: As selected by Architect from manufacturer's full range of colors.
 5. Body Color: Manufacturer's standard white.
 6. Fasteners for Accessories and Locking Mechanisms: Tamperproof type.
- B. Component Thicknesses:
1. Doors: 1/2 inch minimum thickness.
 2. Locker Body: Minimum 5/8 inch thick.
- C. Phenolic Core Panels: Nonporous phenolic resin and paper core formed under high pressure, with natural colored finished edges, integral melamine surface, matte finish, and uniform surface appearance; glued laminated panels not acceptable.
1. Surface Burning Characteristics: Flame spread index of 75 or less, and smoke developed index of 450 or less; when tested in accordance with ASTM E84.
- D. Hinges: Frameless European type fully concealed, nickel-plated heavy-duty steel, allowing for 10 degree opening. Attach hinges to locker body and doors with theft proof torx-head screws and concealed with hinge cover cap to match locker finish.
- E. Number Plates: Manufacturer's standard, digits as directed by owner, permanently attached.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install lockers plumb and square.
- C. Replace components that do not operate smoothly.

3.02 CLEANING

- A. Clean locker interiors and exterior surfaces.

END OF SECTION

SECTION 10 56 17
WALL MOUNTED STANDARDS AND SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Utility shelf standards, brackets, and accessories.
- B. Shelves.

1.02 RELATED REQUIREMENTS

- A. Section 06 10 00 - Rough Carpentry: Wood blocking in walls for attachment of standards.

1.03 REFERENCE STANDARDS

- A. NEMA LD 3 - High-Pressure Decorative Laminates 2005.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products under cover and elevated above grade.
- B. Store products in manufacturer's unopened packaging until ready for installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Utility Shelving Standards and Brackets:
 - 1. Knappe & Vogt Manufacturing Company; 87™/187™ Series:
www.knappeandvogt.com/#sle.
 - 2. Granger; 1WDP Standards with 1WDP Brackets.

2.02 COMPONENTS

- A. Utility Shelving Standards, Brackets, and Accessories:
 - 1. Heavy-Duty Shelf Standards and Brackets: Single-slotted channel standards for brackets adjustable in 1 inch increments along entire length of standard, drilled and countersunk for screws.
 - a. Load Capacity: Recommended by manufacturer for loading of 540 to 1,060 pounds per pair of standards.
 - b. Face Width: 5/8 inch, single slotted.
 - c. Material: 12 gauge, 0.1046 inch sheet steel.
 - d. Lengths: As indicated on drawings.
 - e. Finish: Powdercoat paint or electrozinc-plated and clear lacquered cold rolled steel as selected by Architect.
 - f. Brackets: 12 gauge, 0.1046 inch sheet steel, reinforced, locking into slots with molded nylon cam lock lever; size to suit shelves; same finish as standards.
 - g. Provide brackets for shelf depths and spacing as indicated on drawings. If spacing is not indicated, provide the following:
 - 1) Standards: 2 standards for shelves 3 feet or less, 1 additional standard for each additional 3 foot shelf length.
 - 2) Brackets: Provide 1 bracket at every shelf/standard.
- B. Shelving:
 - 1. Laminate Faced Shelves: Particleboard or medium density fiberboard covered with high pressure decorative laminate on both sides.
 - a. Edge Finish: Matching laminate, all four edges.
 - b. Substrate Thickness: 3/4 inch, nominal.
 - c. Laminate: NEMA LD 3 Type HGL.

- d. Laminate Color and Pattern: To be selected by Architect from manufacturer's full line.
- C. Fasteners: Screws as recommended by manufacturer for intended application or as otherwise required by project conditions. Finish of exposed to view fasteners to match finish of standards and other components.

PART 3 EXECUTION

3.01 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Mount standards or brackets to solid backing capable of supporting intended loads.
- C. Install brackets, shelving, and accessories.

3.03 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

**SECTION 11 33 00
RETRACTABLE STAIRS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manual disappearing stairways.

1.02 REFERENCES

- A. ANSI A14.9: Safety Requirements for Ceiling Mounted Disappearing Climbing Systems.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings for Stairs:
 - 1. Plan and section of stair installation.
 - 2. Indicate rough opening dimensions for ceiling and/or roof openings.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Store stairway until installation inside under cover in manufacturer's unopened packaging. If stored outside, under a tarp or suitable cover.

1.05 WARRANTY

- A. Limited Warranty: One year against defective material and workmanship, covering parts only. Defective parts, as deemed by the manufacturer, will be replaced at no charge, freight excluded, upon inspection at manufacturer's plant.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis-of-Design: Precision Ladders, LLC, www.PrecisionLadders.com
- B. Substitutions: See Section 01 25 00 – Substitution Procedures.

2.02 MANUAL DISAPPEARING STAIRWAY.

- A. Manual Disappearing Stairway.
 - 1. Standard Model: Super Simplex Disappearing Stairway as manufactured by Precision Ladders LLC, Model 1000.
- B. Performance Standard: Unit shall comply with ANSI A14.9, Commercial Type, for rough openings between 27 inches to 39 inches. Residential Type for rough openings between 22-1/2" and 27". Stairway capacity shall be rated at 500 lbs.
- C. Accessories:
 - 1. Steel pole to aid opening and closing stairways.
 - 2. Stairs shall be equipped with a patented Precision Fold Assist to aid in folding and unfolding of sections.
 - 3. Keyed lock for door.
- D. Components:
 - 1. Ceiling Opening: 30" x 64" or as otherwise required by ceiling height.
 - 2. Stairway Stringer: 6005-T5 Extruded aluminum channel 5" x 1" x 1/8"; tri-fold design; steel blade type hinges; adjustable feet with plastic Mar-guard. Pitch shall be 63°.
 - 3. Stairway Tread: 6005-T5 extruded aluminum channel 5 3/16 inches by 1 1/4 inches by 1/8 inch. Depth is 5 3/16 inches. Deeply serrated top surface. Riser Height: 9-1/2 inches. Clear Tread Width for Standard Width: 18 inches.

4. Railing: Aluminum bar handrail riveted to stringers, upper section only.
5. Frame:
 - a. If ceiling to floor (or roof deck) above is under 12", frame shall be 1/8" steel formed channel, box.
 - b. When ceiling to floor (or roof deck) above is 12" or greater, the frame shall be 1/8" steel, 63° (with built-in steps) on the hinge end, 90° on the other end, custom depth to fill distance from ceiling to floor above. This custom frame will require a longer opening in the floor above than is required at the ceiling level.
6. Door Panel
 - a. Standard (non-fire rated) door shall be constructed of 1/8 inch aluminum sheet attached to stairway frame with a steel piano hinge. Door overlaps bottom flange of frame. Eye bolt accommodates pole for opening and closing door.
 - b. On fire-rated models, the door panel shall be constructed of 20 gauge steel and have a 2 hour fire rating for use in fire-rated ceiling assemblies as issued by Warnock-Hersey or other appropriate independent testing/licensing agency.
7. Hardware:
 - a. Steel blade type hinge connecting stringer sections. Zinc plated and chromate sealed.
 - 1) Steel operating arms, both sides. Zinc coat with clear trivalent chromate.
 - 2) Double acting steel springs and cable, both sides.
 - 3) Rivets rated at 1100 lb shear strength each.
 - 4) Steel section alignment clips at stringer section joints.
 - 5) Molded rubber guards at corners of aluminum door panel.
8. Finishes: Mill finish on aluminum stairway components. Prime coat on frame.

2.03 FABRICATION

- A. Completely fabricate ladder ready for installation before shipment to the site.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until rough opening and structural support have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Examine materials upon arrival at site. Notify the carrier and manufacturer of any damage.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.03 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

**SECTION 11 52 13
PROJECTION SCREENS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Front projection screen assemblies.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's catalog cuts and descriptive information on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Wiring diagrams for motor operators and actuators, and controls and switches.
- B. Samples: For screen fabrics, submit two samples 6 by 6 inch in size.
- C. Operation and Maintenance Data: Provide manufacturer's operation and maintenance instructions.
- D. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Deliver projection screens to project site in manufacturer's original unopened packaging, and inspect for damage and proper size before accepting delivery.
- B. Store in a protected, clean, dry area with temperature maintained above 50 degrees F, and stack in accordance with manufacturer's recommendations.
- C. Acclimate screens to building temperatures for 24 hours prior to installation, in accordance with manufacturer's recommendations.

1.04 WARRANTY

- A. Provide five year manufacturer warranty for projection screen assembly.

PART 2 PRODUCTS

2.01 FRONT PROJECTION SCREENS

- A. Manufacturers:
 - 1. Da-Lite Screen Company: www.da-lite.com/#sle.
 - 2. Draper, Inc.: www.draperinc.com/#sle.
 - 3. Substitutions: See Section 01 25 00 - Substitution Procedures.
- B. Front Projection Screens: Factory assembled unless otherwise indicated.
 - 1. Motorized screens assemblies operated by 120V power.
 - 2. Dimensions: As indicated on drawings.
 - 3. Motorized, white matte light diffusing fabric screen, tensioned screen fabric.
 - 4. Mounting: As indicated on drawings.
 - 5. Low-voltage controller, interoperable with related control system.
 - 6. Provide three button low voltage control switch.
 - 7. Screens shall have a back drop to accommodate projection area being no lower than 48 inches above finished floor.
 - 8. Screen gain shall be 1.0, unless otherwise indicated.
- C. Matte Light Diffusing Fabric: Light diffusing screen fabric; washable, flame retardant and mildew resistant.
- D. Provide mounting hardware, brackets, supports, fasteners, and other mounting accessories required for a complete installation, in accordance with manufacturer's recommendations for specified substrates and mountings.

2.02 ELECTRICAL COMPONENTS

- A. Electrical Components: Listed and classified by UL as suitable for the purpose specified and indicated.
- B. Motors: Direct drive, 110/120 V, 60 Hz.
- C. Controls: Three (3) position control switch with plate.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate is finished and ready to accept screen installation.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify type and location of electrical connections.
- D. Do not install projection screens until climate control systems are in place and interior painting and other finishes are completed.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions, using manufacturer's recommended hardware for relevant substrates.
- B. Do not field cut screens.
- C. Install screens in mountings as specified and as indicated on drawings.
- D. Install plumb and level.
- E. Install electrically operated screens ready for connection to power and control systems by others.
- F. Adjust projection screens and related hardware in accordance with manufacturer's instructions for proper placement and operation.
- G. Test electrical screens for proper working condition. Adjust as needed.

END OF SECTION

**SECTION 12 24 13
ROLLER WINDOW SHADES**

GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Motorized roller shades.
 - 2. Manual roller shades.
 - 3. Shade accessories.
 - 4. Control systems.

1.02 RELATED TRADES REQUIREMENT

- A. Refer to Division 26 - Electrical - wiring from power panel to shade drive locations; connect power panel

1.03 REFERENCES

- A. American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE):
 - 1. C62.41-1991 - Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.
 - 2. D4674 -02a Standard Test Method for Accelerated Testing for Color Stability of Plastics Exposed to Indoor Fluorescent Lighting and Window-Filtered Daylight.
- B. National Fire Protection Association (NFPA) 701 (2004) - Standard Methods of Fire Tests for Flame Propagation.
- C. Underwriters Laboratories, Inc. (UL):
 - 1. 1310 - Class 2 Power Units.
 - 2. 508 - Industrial Control Equipment.

1.04 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings; include:
 - a. Shade schedule indicating room number, opening sizes, quantities and key to details.
 - b. Head, jamb and sill details, and mounting dimension requirements for each product and mounting condition.
 - c. One-line wiring system diagrams including connection details and overall arrangement of shades and control locations.
 - 2. Samples:
 - a. Fabric sample showing specified color.
 - b. Samples showing color and finish selection for controls available for review.
 - 3. Product Data; include:
 - a. Descriptive literature and details for each product type including materials, finishes, construction, and dimensions of individual components, profiles, and mounting requirements.
 - b. Wiring diagrams, installation instructions, and operating instructions.
- B. Quality Control Submittals:
 - 1. Test Reports: Indicating compliance with specified fabric properties.
 - 2. Certification: Morton International Laboratory Report for PVC coated fabrics and bacterial and mildew resistance.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Assign responsibility for design, engineering, installation, and performance of window shade system to manufacturer and their qualified dealers and installers.
 - 2. Furnish shading system and electrical control equipment for complete installation

3. Qualified to supply specified products and to honor claims against product presented in accordance with warranty.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Do not deliver shades until concrete, masonry, plaster, painting, and other wet work is complete and dry.
- C. Deliver shades to project in protective packaging, labeled to identify each shade for each opening.
- D. Include installation, programming, and maintenance instructions.

1.07 PROJECT CONDITIONS

- A. Maintain environmental conditions in installation areas within manufacturer's recommended limits:
 1. Ambient operating temperature: 32 to 104 degrees F.
 2. Humidity: 0 to 90 percent, non-condensing
- B. Do not install products under environmental conditions outside manufacturer's absolute limits.
- C. Do not install shade system until building is operating at ambient temperature and humidity ranges that are consistent with those intended for building's ultimate use.

1.08 COORDINATION

- A. Coordinate pre-wiring of system with electrical contractor utilizing manufacturer's approved low voltage wiring to each shade drive location. (Electrical contractor to provide and run low voltage shade wire to window locations from power panel as coordinated with shade installer.)
- B. Fabricate shades after obtaining field dimensions for each opening.
- C. Coordinate construction of surrounding conditions to allow for timely field dimension verification.

1.09 WARRANTY

- A. Provide manufacturer's 5 years (at 100%), and an additional 3 years (50%), parts warranty for defective equipment.

1.10 MAINTENANCE

- A. Make ordering of new equipment for expansions, replacements, and spare parts available to qualified dealer or installer.
- B. Manufacturer to provide 24-hour, 7-day a week technical support to troubleshoot system wiring and aid in system programming.

PART 2 - PRODUCTS

2.01 PRODUCTS

- A. Basis-of-Design:
 1. Manual Shades:
 - a. Lutron, Manual Roller Shades.
 2. Motorized Shades:
 - a. Lutron, Motorized Shades
 3. Substitutions: See Section 01 25 00 - Substitution Procedures.

2.02 SYSTEM DESCRIPTION

- A. Motorized Roller Shade System: Ultra-quiet, precision-controlled electronic drive unit contained within head tube, controlling shade movement.
- B. Manual Roller Shades: The clutch shall be made of high-strength fiberglass reinforced polyester with high carbon steel springs. And, shades shall stop upon release of clutch
- C. Controls: Wall mounted keypads for motorized in offices.

2.03 SYSTEM REQUIREMENTS

- A. Motorized Roller Shades System Description:
 - 1. Ultra-quiet, precision-controlled electronic drive unit housed inside roller tube, controlling shade movement.
 - 2. Audible noise: Maximum 49 dBA measured 3 feet from electronic drive unit. No audible clicks when motor starts or stops.
 - 3. Operate independently, without use of external group controllers.
 - 4. Control shade speed for tracking within plus or minus 0.0625 inch throughout entire travel.
 - 5. Include 10-year power failure memory for preset stops, open and close limits, shade grouping and subgrouping, and system configuration.
 - 6. Systems with multiple electronic drive units electronically synchronized to start, stop, and move in unison.

- B. Manual Roller Shades System Description
 - 1. Clutch Roller Shades shall be a ball chain-operated system utilizing a bidirectional wrap spring clutch and never require any adjustment of the shade.
 - 2. The system must be capable of smoothly raising and lowering the shade to any desired height and maintaining that position without slippage.
 - 3. The shade cannot be operable by any other means other than the chain. Pulling on the hem bar will not disengage the clutch.
 - 4. The system will provide a maximum fabric gap of 0.75" per side.
 - 5. Shade shall stop upon release of clutch. Systems that slide to a stop are not acceptable.
 - 6. Clutch may be mounted on either the right or left end of the roller tube and fabric may be forward or reverse rolled.
 - 7. The clutch shall be made of high-strength fiberglass reinforced polyester with high carbon steel springs.
 - 8. Manufacturer shall identify appropriate shade tube and clutch size based on shade size, fabric type, and application requirements.
 - 9. Fabric shall be connected to tube with double-sided adhesive strip applied for exact and firm mounting of the fabric and for easy adjustment of fabric to prevent telescoping.
 - a. A minimum of one turn of fabric will be placed on the roller before the working section of fabric starts to protect the fabric and smooth out the starting seam.
 - 10. Chain will be made of #10 stainless steel 90-pound test ball chain. Chain will be provided with connector and upper and lower ball stops.
 - 11. Chains to be anchored to side jamb with tensioner to ensure proper use of chain and as required for safety.
 - 12. Clutch Idle End Cap: Two-piece unit consisting of an outside sleeve and center bearing shaft made of high-strength fiberglass reinforced polyester.
 - a. The outside sleeve shall be free to rotate on the shaft, providing the bearing surfaces on which the roller rides in order to provide a smooth and quiet rotation without wearing on the system.
 - 13. Clutch Mounting Brackets
 - a. Shall be .072" galvanized steel
 - b. Shall be universally applicable for mounting inside, outside or to the ceiling, with the clutch on either the right or left side of the roller.
 - c. The clutch mounts flush to the face of the bracket resulting in the smallest possible light gap between fabric and window frame.

- C. Grouping:
 - 1. Keypads can control any electronic drive unit without separate group controller.
 - 2. System groups and subgroups configured at point of control without rewiring and without access to electronic drive unit.
 - 3. System may contain multiple electronic drive units.
 - 4. Keypads and interfaces able to operate any group or subgroup of electronic drive units.

- D. System Controls:
 - 1. Shades controlled by built-in shade columns or by keypad.

2. Electronic drive units and keypads contain microprocessors, allowing high level programming from any source.
 3. System devices, including shades, connected through common communication link.
- E. Motorized Roller Shades System Performance:
1. One-touch control of shades by means of keypad
 2. Capable of stopping within accuracy of 0.125 inch at any point between open and close limits.
 3. Store over 250 programmable stop points, including open, close, and any other position.
 4. Presets set by 5-second button push and hold from keypad.
 5. Presets recalled by keypad.
 6. Open and close limits programmable from electronic drive unit, wall-mounted keypad.
 7. System components electro-static discharge protected.

2.04 ROLLER SHADES

- A. Mounting:
1. Brackets to provide symmetrical light gaps of 0.75 inch on each side of shade.
 2. Roller shade leveling adjustment allowing leveling adjustment while roller shades are mounted to brackets.
 3. Allow side-to-side adjustment up to 0.375 inch on each side while shade is mounted to bracket.
 4. Projection adjustment up to 0.50 inch.
 5. Coupling:
 - a. Single electronic drive unit capable of driving multiple shades where noted in schedule.
 - b. Allows for precision adjustment of bottom bar levels without removing roller from installed point or fabric from roller tube.
- B. Shade Tube: Fabric connected to tube using double-sided adhesive strip with minimum of one turn of fabric on roller before working section of fabric starts.
- C. Housing: Provide blocking support/adequate support. See schedule for details.
- D. Fabric:
1. Pass NFPA 701 large and small scale tests.
 2. Where applicable, seal shade fabric or treat PVC-coated fabric edges to prevent fraying.
 3. Minimum 5 mm "No Growth Contact Area", tested to ASTM G22 for ATCC6538 (*Staphylococcus aureus*) and ATCC13388 (*Pseudomonas aeruginosa*).
 4. No growth, tested to ASTM G21 for ATCC9642, ATCC9348, and ATCC9645.
 5. Fabric selection:
- E. Bottom Bar: Lutron hembar.

2.05 ACCESSORIES

- A. Wall Mounted Controls:
1. Low voltage keypads with faceplates attached without visible means of attachments, with backlit buttons: Type: QS Shade Keypad - SeeTouch keypad; color white -keypad(s) located where indicated on plans.
- B. Power Supplies:
1. Electronic drive units powered with 24 VDC from approved power supply; power supply via NEC Class 2 power source.
 2. Shade Installer to provide shade power panels.

2.06 SOURCE QUALITY CONTROL

- A. Perform full-function testing on completed assemblies prior to shipment.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Install shades to provide smooth operation.
- C. Locate controls where directed.
- D. Connect to power supply and control wiring.

3.02 ADJUSTING

- A. Adjust level, projection, and shade centering from mounting brackets.
- B. Adjust fabric on tube if visibly telescoping.

3.03 DEMONSTRATION

- A. Demonstrate proper operation and maintenance of window shade system to Owner.

END OF SECTION

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**SECTION 12 36 00
COUNTERTOPS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Countertops for architectural cabinet work.
- B. Wall-hung counters and vanity tops.

1.02 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Particleboard 2022.
- B. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications 2022.
- C. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition 2014, with Errata (2016).
- D. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards 2021, with Errata.
- E. ISFA 3-01 - Classification and Standards for Quartz Surfacing Material 2013.
- F. NEMA LD 3 - High-Pressure Decorative Laminates 2005.
- G. NSI (DSDM) - Dimensional Stone Design Manual, Version VIII 2016.
- H. PS 1 - Structural Plywood 2019.

1.03 SUBMITTALS

- A. 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.
 - 3. Specimen warranty.
- B. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.
- C. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
- D. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
- E. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.04 QUALITY ASSURANCE

- A. Fabricator of this section must also provide work specified in Division 6 Section "Wood-Veneer Paneling".

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.

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 accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
- B. Plastic Laminate Countertops: High-pressure decorative laminate (HPDL) sheet bonded to substrate.
 - 1. Laminate Sheet: NEMA LD 3, Grade HGS, 0.048 inch nominal thickness.

- a. Laminate Core Color: Same as decorative surface.
- b. Surface Color and Pattern: See drawings for interior Finish Specs.
2. Exposed Edge Treatment: Square, substrate built up to minimum 1-1/4 inch thick; covered with matching laminate.
3. Back and End Splashes: Same material, same construction.
4. Fabricate in accordance with AWI/AWMAC/WI (AWS), Section 11 - Countertops, Custom Grade.
5. Use exterior grade plywood at sink locations.
- C. Natural Quartz and Resin Composite Countertops: Sheet or slab of natural quartz and plastic resin.
 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. Factory fabricate components to the greatest extent practical in sizes and shapes indicated; comply with NSI (DSDM).
 3. Back Splashes: Same sheet material, square top; minimum 4 inches high.
 4. Fabricate in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 11 - Countertops, Premium Grade.
 5. Manufacturer, Color and Pattern: See drawings for interior Finish Specs.

2.02 MATERIALS

- A. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade with no added urea formaldehyde, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.
- B. Particleboard for Supporting Substrate: ANSI A208.1 Grade M-2, moisture resistant, with no added urea formaldehyde, 45 pcf minimum density; minimum 3/4 inch thick; join lengths using metal splines.
- C. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2, Grade 130 with no added urea formaldehyde; 3/4 inch thick; join lengths using metal splines.
- D. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 ACCESSORIES

- A. Countertop Supports:
 1. Material: Steel.
 2. Depth: As required for countertop depth or as indicated on drawings.
 3. Finish/Color: Powder coat finish. Color to be selected by Architect from manufacturer's full range.
 4. Basis-of-Design: Hafele, Countertop Support Bracket 287.74.
 - a. Substitutions: See Section 01 25 00 - Substitution Procedures.

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.
 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 otherwise indicated.
 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.

- 2. Height: 4 inches, unless otherwise indicated.
- C. Wall-Mounted Counters: Provide skirts, aprons, brackets, and braces as indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 INSTALLATION

- A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.
- C. Seal joint between back/end splashes and vertical surfaces.

3.03 TOLERANCES

- A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.
- B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.
- C. Field Joints: 1/8 inch wide, maximum.

3.04 CLEANING

- A. Clean countertops surfaces thoroughly.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

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- A. Do not begin installation until openings have been verified and surfaces properly prepared in accordance with Drawings. Prepare all surfaces per recommendations of manufacturer. Install in accordance with manufacturer's instructions and UL 752. Set all equipment plumb. Fire rated assemblies in accordance with NFPA80.
- B. Install bullet resistant fiberglass panels using industrial adhesive, mastic, screws and bolts. Typical installation method of application shall maintain bullet resistant rating at junctures with concrete floor, door and window frames and other penetrations. Installation tolerance shall not exceed 1/16th of an inch for squareness, alignment, twist and plumb. Install hardware as specified.

3.03 JOINTS

- A. All joints shall be reinforced by a back-up layer of bullet resistant material that shall be 4" (2" on each panel) or a 2" overlap minimum.
- B. The bullet resistance of the joint, as reinforced, shall be at least equal to that of the panel.

3.04 POST APPLICATION

- A. Inspection and Cleaning: Verify installation is complete and complies with manufacturer's requirements. Clean product and accessories, removing excess sealant, labels and protective covers.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

**SECTION 14 20 10
TRACTION ELEVATORS**

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Electric Traction Passenger Elevators.
- B. Products Supplied But Not Installed Under this Section:
 - 1. Hoist Beam
- C. Work Supplied Under Other Sections:
 - 1. Temporary lighting, including temporary lighting in hoistway for machine space with switch located in hoistway on the strike jamb side of top landing door.
 - 2. One fused three phase permanent power in building electrical distribution room
 - 3. Hoistway ventilation shall be in accordance with local and national building code requirements.
 - 4. Pit lighting: Fixture with switch and guards. Provide illumination level equal to or greater than that required by ASME A17.1/CSA B44 2000, or applicable version.
 - 5. Control space lighting with switch. Coordinate switch with lighting for machine space as allowable by code.
 - 6. Removable barricades at all hoistway openings, in compliance with OSHA 29 CFR 1926.502 in addition to local code requirements.
- D. Related sections:
 - 1. Section 03 30 00 - Cast-in-Place Concrete:
 - 2. Section 05 50 00 - Metal Fabrications: for hoist beam.
 - 3. Section 07 14 00 - Fluid-Applied Waterproofing
 - 4. Section 08 31 00 - Access Doors and Panels
 - 5. Division 23 - Heating, Ventilating, and Air Conditioning
 - 6. Division 26 - Electrical
 - 7. Division 27 - Communications
 - 8. Division 28 - Fire Detection and Alarm
 - 9. Division 32 - Earthwork
- E. Industry and government standards:
 - 1. ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities
 - 2. ADAAG - Accessibility Guidelines for Buildings and Facilities
 - 3. ANSI/NFPA 70, National Electrical Code
 - 4. ANSI/NFPA 80, Standard for Fire Doors and Fire Windows
 - 5. ASME/ANSI A17.1, Safety Code for Elevators and Escalators.

1.02 DESCRIPTION OF ELEVATOR

- A. Drive: Regenerative.
- B. Quantity of Elevators: 1
- C. Landings: 2
- D. Openings: 2 Front Openings.
- E. Travel: As indicated on drawings
- F. Rated Capacity: 2100 lbs
- G. Rated Speed: 100 fpm
- H. Clear Car Inside: 5'- 9-5/16" x 4'-4-7/8"
- I. Cab Height: 7'-9'
- J. Entrance Width & Type: 3'-0" & Side Opening
- K. Entrance Height: 7'

- L. Main Power Supply: 208 Volts + 5%, three-phase
- M. Operation: Simplex.
- N. Machine Location: Top of the hoistway mounted on car and counterweight guide rails.
- O. Control Space Location: Top landing entrance frame or entrance frame at one floor below the top landing
- P. Elevator Equipment shall conform to the requirements of seismic zone:
 - 1. Seismic Design Category: C
 - 2. Seismic Importance Factor: 1.5
 - 3. Risk Category: IV
- Q. Maintenance Service Period: 12 Months

1.03 PERFORMANCE REQUIREMENTS

- A. Car Performance:
 - 1. Car Speed: -10% to +5% of contract speed under any loading condition or direction of travel.
 - 2. Car Capacity: Safely lower, stop and hold (per code) up to 125% of rated load.
- B. System Performance
 - 1. Vertical Vibration (maximum): 25 mg
 - 2. Horizontal Vibration (maximum): 15 mg
 - 3. Jerk Rate (maximum): 2 ft/sec³
 - 4. Acceleration (maximum) 1.6 ft/sec²
 - 5. In Car Noise: = 53-60 dB(A)
 - 6. Stopping Accuracy: ±5mm
 - 7. Starts per hour (maximum): 180
- C. Code Requirements: Elevator must comply with the following:
 - 1. International Building Code, 2018.
 - a. Per IBC ch 30, the elevator must have emergency elevator communication systems for the deaf, hard of hearing and speech impaired.
 - 2. Iowa Code Chapter 89 A, "Iowa State Elevator Code". This code identifies the applicable chapters which govern elevator installations based on dates of installation along with other codes affecting the elevators installation such as accessibility and construction standards.
 - 3. Iowa Code, Chapter 72, Governs conveyances installed after January 1, 1975.
 - 4. ASME A17.1 American Society of Mechanical Engineers, "Safety Code for Elevators and Escalators", edition adopted by the State of Iowa, currently known to be 2019 edition, except as ammended.
 - 5. NFPA 70 National Electrical Code. Governs the electrical requirements of components, systems, wiring, clearances, etc. of elevator installations. The State of Iowa has currently adopted the 2020 edition.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's product literature for each proposed system.
 - 1. Cab design, dimensions and layout.
 - 2. Layout, finishes, and accessories and available options.
 - 3. Controls, signals and operating system.
 - 4. Color selection charts for cab and entrances.
- B. Shop Drawings:
 - 1. Clearances and travel of car.
 - 2. Clear inside hoistway and pit dimensions.
 - 3. Location and layout of equipment and signals.
 - 4. Car, guide rails, buffers and other components in hoistway.
 - 5. Maximum rail bracket spacing.

6. Maximum loads imposed on building structure.
 7. Hoist beam requirements.
 8. Location and sizes of access doors.
 9. Location and details of hoistway door and frames.
 10. Electrical characteristics and connection requirements.
- C. Operation and maintenance data:
1. Provide manufacturer's standard maintenance and operation manual.
- D. Diagnostic Tools
1. Prior to seeking final acceptance for the completed project as specified by the Contract Documents, the Elevator Contractor shall deliver to the Owner any specialized tool(s) that may be required to perform diagnostic evaluations, adjustments, and/or parametric software changes and/or test and inspections on any piece of control or monitoring equipment installed. This shall include any specialized tool(s) required for monitoring, inspection and/or maintenance where the means of suspension other than conventional wire ropes are furnished and installed by the Elevator Contractor. Any and all such tool(s) shall become property of the Owner. Any diagnostic tool provided to the Owner by the Elevator Contractor shall be configured to perform all levels of diagnostics, systems adjustment and parametric software changes which are available to the Elevator Contractor. In those cases where diagnostic tools provided to the Owner require periodic recalibration/or re-initiation, the Elevator Contractor shall perform such tasks at no additional cost to the Owner for a period equal to the term of the maintenance agreement from the date of final acceptance of the completed project. During those intervals in which the Owner might find it necessary to surrender a diagnostic tool for re-calibration, re-initiation, or repair, the Elevator Contractor shall provide a temporary replacement for the tool at no additional cost to the Owner. The Elevator Contractor shall deliver to the Owner, printed instructions for the proper use of any tool that may be necessary to perform diagnostic evaluations, system adjustment, and/or parametric software changes on any unit of microprocessor-based elevator control equipment and means of suspension other than standard elevator steel cables furnished and install by the Elevator Contractor. Accompanying the printed instructions shall be any and all access codes, password, or other proprietary information that is necessary to interface with the microprocessor-control equipment.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Minimum of ten years experience in the fabrication, installation and service of elevators of the type and performance of the specified. The manufacturer shall have a documented quality assurance program.
- B. Installer: The equipment manufacturer shall install the elevator.
- C. Inspection and Testing: In accordance with requirements of local jurisdiction, obtain required permits, inspections and tests.

1.06 DELIVERY, STORAGE AND HANDLING

- A. If the construction site is not prepared to receive the elevator equipment at the agreed ship date, the General Contractor shall be responsible to provide a safe, dry, and easily accessible storage area on or off the premises. Additional labor costs for double handling will be the responsibility of the general contractor.
- B. Delivered elevator materials shall be stored in a protected environment in accordance with manufacturer recommendations. A minimum storage area of 10 feet by 20 feet is required adjacent to the hoistway.

1.07 WARRANTY

- A. Provide manufacturer warranty for a period of one year. The warranty period is to begin upon Substantial Completion of the Contract. Warranty covers defects in materials and workmanship. Damage due to ordinary use, vandalism, improper or insufficient maintenance, misuse, or

neglect do not constitute defective material or workmanship.

1.08 MAINTENANCE SERVICE

- A. The elevator manufacturer shall provide maintenance service consisting of regular examinations and adjustments of the elevator equipment for a period of 12 Months after date of substantial completion. Replacement parts shall be produced by the original equipment manufacturer.
- B. Maintenance service be performed during regular working hours of regular working days and shall include regular time call back service.
- C. Maintenance service shall not include adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. Provide gearless machine room-less elevator systems subject to compliance with the design and performance requirements of this specification. Provide the specified system or a comparable system approved by the Architect prior to bid:
 - 1. Basis-of-Design: Schindler 3100 Gearless Traction Elevator.

2.02 EQUIPMENT: CONTROL COMPONENTS AND CONTROL SPACE

- A. Controller: Provide microcomputer based control system to perform all of the functions.
 - 1. All high voltage (110V or above) contact points inside the controller cabinet shall be protected from accidental contact in a situation where the controller doors are open.
 - 2. Controller shall be separated into two distinct halves; Motor Drive side and Control side. High voltage motor power conductors shall be routed and physically segregated from the rest of the controller.
 - 3. Provide a serial cardrack and main CPU board containing a non-erasable EPROM and operating system firmware.
 - 4. Variable field parameters and adjustments shall be contained in a non-volatile memory module.
- B. Drive: Provide Variable Voltage Variable Frequency AC drive system to develop high starting torque with low starting current.
- C. Controller Location: Locate controller in the front wall integrated with the top landing entrance frame, machine side of the elevator. One non-fused three phase permanent power in hoist way at top landing. A separate control space should not be required.

2.03 EQUIPMENT: HOISTWAY COMPONENTS

- A. Machine: AC gearless machine, with permanent magnet synchronous motor, direct current electro-mechanical disc brakes and integral traction drive sheave, mounted to the car guide rail at the top of the hoistway.
- B. Governor: Friction type over-speed governor rated for the duty of the elevator specified.
- C. Buffers, Car and Counterweight: Polyurethane buffer.
- D. Hoistway Operating Devices:
 - 1. Emergency stop switch in the pit
 - 2. Terminal stopping switches.
 - 3. Emergency stop switch on the machine
- E. Positioning System: System consisting of magnets and proximity switches.
- F. Guide Rails and Attachments: Steel rails with brackets and fasteners.
- G. Lifeline attachments capable of withstanding 5000 lb load in accordance with OSHA 29 CFR 1926.502. Provide a minimum of 2 at the top, front of each hoistway.

2.04 EQUIPMENT: HOISTWAY ENTRANCES

- A. Hoistway Entrances
 - 1. Sills: extruded.
 - 2. Doors: Hollow metal construction with vertical internal channel reinforcements.
 - 3. Fire Rating: Entrance and doors shall be UL fire-rated for 1-1/2 hour.
 - 4. Entrance Finish: Brushed, ferritic stainless steel, magnetic for attachment of smoke curtain..
 - 5. Entrance Markings Jamb Plates: Provide standard entrance jamb tactile markings on both jambs, at all floors. Plate Mounting: Refer to manufacturer drawings.

2.05 EQUIPMENT: CAR COMPONENTS

- A. Car Frame: Provide car frame with adequate bracing to support the platform and car enclosure.
- B. Car Safeties: Device will be provided and mounted under the car platform, securely bolted to the Car Frame. The safety will be actuated by a centrifugal governor mounted at the top of the hoistway. The Safety is designed to operate in case the car attains excessive descending speed.
- C. Platform: Platform shall be per manufacturers standard.
- D. Car Guides: Provide guide-shoes mounted to top and bottom of both car and counterweight frame. Each guide-shoe assembly shall be arranged to maintain constant contact on the rail surfaces. Provide retainers in areas with Seismic design requirements.
- E. Load weighing device shall be strain gauge type mounted to dead-end hitch attached atop the hoistway guide-rail.
- F. Steel Cab:
 - 1. Wall Panel Orientation: Vertical.
 - 2. Side and Rear Walls: Brushed stainless steel (4SS), raised panels.
 - 3. Reveal Strip: Brushed stainless steel (4SS).
 - 4. Front Wall: Brushed stainless steel (4SS).
 - 5. Ceiling: Square, LED spotlights (CL97), brushed stainless steel (4SS).
 - 6. Signalization: KCS 570 flush brushed stainless steel (4SS).
 - 7. Handrails: Rectangular, straight ends (HR63), brushed stainless steel (4SS).
 - 8. Skirting: Brushed stainless steel (4SS).
- G. Flooring: Refer to Finish drawings for flooring finish. Coordinate recess depth required to receive finish flooring.
- H. Threshold: Aluminum
- I. Protective pad hooks and quilted fire retardant protective pads: Pad to be hung from suspended ceiling
- J. Emergency Car Signals
 - 1. Emergency Siren: Siren mounted on top of cab that is activated when the alarm button in the car operating panel is engaged. Siren shall have rated sound pressure level of 80 dB(A) at a distance of three feet from device. Siren shall respond with a delay of not more than one second after activation of alarm button.
 - 2. Emergency Car Lighting: Provide emergency power unit employing a 12-volt sealed rechargeable battery and totally static circuits shall illuminate the elevator car and provide current to the alarm bell in the event of building power failure.
 - 3. Emergency Exit Contact: An electrical contact shall be provided on the car-top exit.
- K. Ventilation: Fan.

2.06 EQUIPMENT: SIGNAL DEVICES AND FIXTURES

- A. Car Operating Panel: Provide car operating panel with all push buttons, key switches, and message indicators for elevator operation.
 - 1. Main Flush mounted car operating panel shall contain a bank of round, mechanical, illuminated buttons marked to correspond to landings served, emergency call button, door

open button, door close button, and key switches for lights, inspection, and exhaust fan. Buttons have White Dot Matrix illumination (halo). All buttons to have raised text and Braille marking on left hand side. The car operating display panel shall be White Dot Matrix. All texts, when illuminated, shall be White Dot Matrix. The car operating panel shall have a Brushed Stainless Steel finish.

2. Additional features of car operating panel shall include:
 - a. Car Position Indicator within operating panel (brushed stainless steel)
 - b. Elevator Data Plate marked with elevator capacity and car number on car top.
 - c. Help buttons with raised markings.
 - d. In car stop switch per local code.
 - e. Firefighter's Phase II Key-switch.
 - f. Firefighter's Phase II emergency in-car operating instructions.
- B. Communication
 1. Car Communication System: Provide system complying with IBC 3001.2 and the following:
 - a. Hands-Free Phone System:
 - 1) Two-way communication instrument in car with automatic dialing, tracking, and recall features, with shielded wiring to car controller in machine room space.
 - 2) Provide dialer with automatic rollover capability with minimum two numbers:
 - (a) Actuate two-way communication via "Help" button.
 - (b) Adjacent light jewel shall illuminate and flash when call is acknowledged.
 - (c) Button shall match car operating panel pushbutton design.
 - (d) Provide "Help" button tactile symbol, engraved signage, and Tactile marking adjacent to button mounted integral with car front return panel.
 - b. Emergency Personnel Communication:
 - 1) Communication system shall be provided allowing emergency personnel to establish communications with each elevator individually.
 - 2) Emergency Personnel Communication shall override any existing connection outside of building.
 - 3) Adjacent light jewel shall illuminate and flash when call is acknowledged.
 - 4) Provide operating instructions.
 - 5) On the same car operating panel as the phone push button, provide capability to communicate with and obtain responses from passengers.
 - 6) Provide display video capability for entrapment assessment.
 - c. Communication for deaf, hearing and speech impaired:
 - 1) On the same car operating panel as the phone push button, provide capability to communicate with and obtain responses from passengers, including those passengers who cannot communicate verbally or hear.
 - d. Provide single-phase disconnect for visual and text based communication system. Coordinate installation with electrical contractor.
 1. Hall Fixtures: Wall mounted hall fixtures shall be provided with necessary push buttons and key switches for elevator operation. Wall mounted hall fixtures shall have a polycarbonate face plate that is shatterproof and impact resistant in a color per manufacturers standard selection.
 1. Hall fixtures shall feature round, mechanical, buttons in applied mount face frame. Hall fixtures shall correspond to options available from that landing. Buttons shall be in a vertically mounted fixture. Hall fixtures shall not be jamb-mounted. Hall lanterns shall feature white illumination.
 - D. Car Lantern and Chime: A directional lantern visible from the corridor shall be provided in the car entrance. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound. The chime will sound once for up and twice for down. The car riding lantern face plate shall have a Brushed Stainless Steel finish.

2.07 EQUIPMENT: ELEVATOR OPERATION AND CONTROLLER

- A. Elevator Operation:
 - 1. Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.
 - 2. Zoned Car Parking.
 - 3. Relative System Response Dispatching.
- B. Standard Operating Features to include:
 - 1. Full Collective Operation
 - 2. Fan and Light Control.
 - 3. Load Weighing Bypass.
 - 4. Ascending Car Uncontrolled Movement Protection
 - 5. Top of Car Inspection Station.
- C. Elevator Control System for Inspections and Emergency
 - 1. Provide devices within controller to run the elevator in inspection operation.
 - 2. Provide devices on car top to run the elevator in inspection operation.
 - 3. Provide within controller an emergency stop switch to disconnect power from the brake and prevents motor from running.
 - 4. Provide the means from the controller to mechanically lift and control the elevator brake to safely bring car to nearest available landing when power is interrupted.
 - 5. Provide the means from the controller to reset the governor over speed switch and also trip the governor.
 - 6. Provide the means from the controller to reset the emergency brake when set because of an unintended car movement or ascending car over speed.
 - 7. Provide the means for the control to reset elevator earthquake operation.
- D. Additional Operating Features to be included:
 - 1. Provisions for Card Reader in Car (Card reader provided and installed by others).
 - 2. Provisions for Standby Power (Emergency power generator by Electrical Contractor).

2.08 EQUIPMENT: DOOR OPERATOR AND CONTROL

- A. Door Operator: A closed loop permanent magnet VVVF high-performance door operator shall be provided to open and close the car and hoistway doors simultaneously. Door movement shall be cushioned at both limits of travel. Electro-mechanical interlock shall be provided at each hoistway entrance to prevent operation of the elevator unless all doors are closed and locked. An electric contact shall be provided on the car at each car entrance to prevent the operation of the elevator unless the car door is closed.
- B. The door operator shall be arranged so that, in case of interruption or failure of electric power, the doors can be readily opened by hand from within the car, in accordance with applicable code. Emergency devices and keys for opening doors from the landing shall be provided as required by local code.
- C. Doors shall open automatically when the car has arrived at or is leveling at the respective landings. Doors shall close after a predetermined time interval or immediately upon pressing of a car button. A door open button shall be provided in the car. Momentary pressing of this button shall reopen the doors and reset the time interval.
- D. Door hangers and tracks shall be provided for each car and hoistway door. Tracks shall be contoured to match the hanger sheaves. The hangers shall be designed for power operation with provisions for vertical and lateral adjustment. Hanger sheaves shall have polyurethane tires and pre-lubricated sealed-for-life bearings.
- E. Electronic Door Safety Device. The elevator car shall be equipped with an electronic protective device extending the full height of the car. When activated, this sensor shall prevent the doors from closing or cause them to stop and reopen if they are in the process of closing. The doors shall remain open as long as the flow of traffic continues and shall close shortly after the last person passes through the door opening.

2.09 MISCELLANEOUS ITEMS

- A. Metal Pit Ladder:
 - 1. Comply with ASME A17.1.
 - 2. Space siderails 18 inches apart, unless otherwise indicated.
 - 3. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted brackets, made from same metal as ladder.
 - 4. Siderails: Continuous, 1/2-by-2-1/2-inch steel flat bars, with eased edges.
 - 5. Rungs: 1-inch- square steel bars.
 - 6. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
 - 7. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
 - 8. Galvanize ladders, including brackets and fasteners.
- B. Access Doors: Access door shall be self-closing, self-locking if necessary and operable from the inside without a key.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Field measure and examine substrates, supports, and other conditions under which elevator work is to be performed.
- B. Do not proceed with work until unsatisfactory conditions are corrected.
- C. Prior to start of Work, verify hoistway is in accordance with shop drawings. Dimensional tolerance of hoistway from shop drawings: -0 inches +2 inches. Do not begin work of this section until dimensions are within tolerances.
- D. Prior to start of Work, verify projections greater than 2 inches (4 inches if ASME A17.1/CSA B44 2000 applies) must be beveled not less than 75 degrees from horizontal.
- E. Prior to start of Work, verify landings have been prepared for entrance sill installation. Traditional sill angle or concrete sill support shall not be required.
- F. Prior to start of Work, verify elevator pit has been constructed in accordance with requirements, is dry and reinforced to sustain vertical forces, as indicated in approved submittal. Verify that sumps or sump pumps located within pit will not interfere with installed elevator equipment.
- G. Prior to start of Work, verify control space has been constructed in accordance with requirements, with access coordinated with elevator shop drawings, including Sleeves and penetrations.
- H. Verify installation of GFCI protected 20-amp in pit and adjacent to each signal control cabinet in control space.

3.02 PREPARATION

- A. Coordinate installation of anchors, bearing plates, brackets and other related accessories.

3.03 INSTALLATION

- A. Install equipment, guides, controls, car and accessories in accordance with manufacturer installation methods and recommended practices.
- B. Properly locate guide rails and related supports at locations in accordance with manufacturer's recommendations and approved shop drawings. Anchor to building structure using isolation system to minimize transmission of vibration to structure.
- C. All hoistway frames shall be securely fastened to fixing angles mounted in the hoistway. Coordinate installation of sills and frames with other trades.
- D. Lubricate operating system components in accordance with manufacturer recommendations.
- E. Perform final adjustments, and necessary service prior to substantial completion.

3.04 CONSTRUCTION

- A. Interface with Other Work:
 - 1. Guide rail brackets attached to steel shall be installed prior to application of fireproofing.
 - 2. Coordinate construction of entrance walls with installation of door frames and sills. Maintain front wall opening until elevator equipment has been installed.
 - 3. Ensure adequate support for entrance attachment points at all landings.
 - 4. Coordinate wall openings for hall push buttons, signal fixtures and sleeves. Each elevator requires sleeves within the hoistway wall.
 - 5. Coordinate emergency power transfer switch and power change pending signals as required for termination at the primary elevator signal control cabinet in each group.
 - 6. Coordinate interface of elevators and fire alarm system.
 - 7. Coordinate interface of communication system.
 - 8. Coordinate interface with building backup generator.
 - 9. Coordinate the installation of the non fused three phase permanent power disconnect in hoist way at top landing

3.05 TESTING AND INSPECTIONS

- A. Perform recommended and required testing in accordance with authority having jurisdiction.
- B. Obtain required permits and provide originals to Owner's Representative.

3.06 DEMONSTRATION

- A. Prior to substantial completion, instruct Owner's Representative on the proper function and required daily maintenance of elevators. Instruct personnel on emergency procedures.

END OF SECTION

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