

# SPECIFICATIONS

**PROPOSED RENOVATION & ADDITION  
FOR  
COLUMBIA COUNTY JUSTICE CENTER  
640 RONALD REAGAN DRIVE  
EVANS, GEORGIA 30809**



670 Broad Street  
Augusta, Georgia 30901

**BOARD OF COMMISSIONERS**

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STEVEN D. PRATHER

CIVIL ENGINEER:	BLUEWATER ENGINEERING BILL CORDER, PE	FIRE PROTECTION ENGINEER:	PFA ENGINEERING, INC. JOE C. POWELL, PE
STRUCTURAL ENGINEER:	SLATER ENGINEERING BRIAN SLATER, PE	ELECTRICAL ENGINEER:	ELECTRICAL DESIGN CONSULTANTS TOM BRINSON, PE
MECHANICAL ENGINEER:	PFA ENGINEERING, INC. BRIAN MESSER, PE	INTERIOR DESIGNER:	CORPORATE STUDIO LISA BURGESS, RID
PLUMBING ENGINEER:	PFA ENGINEERING, INC. JOE C. POWELL, PE		

**Volume I of II**

**ISSUED FOR BID - JANUARY 29, 2024**

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## INVITATION TO BID

**BID #: 2023008-BID3000**

**BID ITEM: Columbia County Justice Center Additions and Renovations**

Electronic bids will be received by the **BOARD OF COMMISSIONERS OF COLUMBIA COUNTY, PROCUREMENT DEPARTMENT, 500 FAIRCLOTH DRIVE, EVANS, GEORGIA 30809**, until **March 7th, 2024 at 12:00 PM EST**. Public opening will be held virtually on the same day via WebEx at <https://ccgagov.webex.com/meet/gosteen> at **2:00 PM EST**. No submitted bid may be withdrawn after the scheduled closing time for receipt of bids for a period of sixty (60) days.

**Bids are to be submitted electronically at**  
<https://columbiacountyga.bonfirehub.com>

**All Bidders must have a State of Georgia General Contractor's License and a Columbia County business license.**

**Bid Description:** The project consists of an existing three story, 70,000 square feet courthouse building. The existing floors (A-3 Assembly) will be renovated (14,000 square feet), and will have three story additions on each end of building (12,500 square feet each) for a total of 25,000 square feet. Type IIIB construction, sprinklered. The exterior consists of Brick Veneer, Concrete Masonry and FRP cornices, Cast Stone Trim/Headers and Precast Concrete Trim.

Bids for the complete work in one general contract shall be made on the electronic forms provided. All proposals shall be accompanied by a Bid Bond drawn in favor of Columbia County, Georgia, in the amount of at least five percent (5%) of the lump sum bid for the complete work; such Bid Bond representing that the Bidder, if awarded the contract, will promptly enter into a contract and furnish Performance Bond and Payment Bond as provided by law and approved by the Attorney for Columbia County, Georgia.

Each bond shall be equal to one hundred percent (100%) of the contract amount. The Bid Bond shall be forfeited to Columbia County, Georgia as liquidated damages if the Bidder fails to execute the contract and provide Performance and Payment Bonds within ten (10) days after being notified that he has been awarded the contract. **Letters of credit will not be accepted.**

Bid bonds for electronic bids should be uploaded as directed via <https://columbiacountyga.bonfirehub.com>. Questions regarding Bonfire Interactive may be directed to Bonfire Customer Care at 800-354-8010 Ext. 2.

Drawings and Specifications may be downloaded free of charge at <https://columbiacountyga.bonfirehub.com>. All questions should be submitted online via Bonfire Interactive before **5:00 PM EST** on **February 28<sup>th</sup>, 2024**, and receipt of any/all addenda must be acknowledged prior to contract award.

Architect: **Booker + Vick Architects, Inc.**  
**670 Broad Street**  
**Augusta, GA 30901**

The Owner reserves the right to reject any or all bids and to waive informalities. Any objections to the specifications or contract documents as set forth should be submitted online five days prior to bid openings. Contractor is responsible for verifying issuance of any/all Addenda, and addenda must be acknowledged prior to award.

**COLUMBIA COUNTY BOARD OF COMMISSIONERS**  
**GLENN O'STEEN, PROCUREMENT MANAGER**

**FAXED BIDS WILL NOT BE ACCEPTED**

Advertising in The Augusta Chronicle: N/A

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**PROPOSAL**

PROPOSAL OF \_\_\_\_\_ (hereinafter)

called "BIDDER", organized and existing under the laws of the State of \_\_\_\_\_,  
doing business as \_\_\_\_\_.\*

TO: Columbia County, GA  
c/o Purchasing Dept.  
500 Faircloth Drive  
Evans, Georgia 30809 (hereinafter called "OWNER")

In compliance with your Advertisement For Bids, BIDDER hereby proposes to perform all WORK of the Contract for: **BID# 2023008-BID3000 Columbia County Justice Center Additions and Renovations**, COLUMBIA COUNTY, GEORGIA, in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the price stated below.

By submission of this BID, each BIDDER certifies, and in the case of joint BID, each party thereto certifies as to his own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence work under this Contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the Project within 780 consecutive calendar days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of one thousand dollars (\$1000.00) for each consecutive calendar day thereafter as provided in Section 4.5 of AIA101 Standard Form of Agreement between Owner and Contractor.

BIDDER acknowledges receipt of the following ADDENDUM(A):

No. \_\_\_\_\_ Dated \_\_\_\_\_, \_\_\_\_\_  
No. \_\_\_\_\_ Dated \_\_\_\_\_, \_\_\_\_\_  
No. \_\_\_\_\_ Dated \_\_\_\_\_, \_\_\_\_\_  
No. \_\_\_\_\_ Dated \_\_\_\_\_, \_\_\_\_\_

BIDDER acknowledges **ALLOWANCES** included in the base bid amount of **\$1,000,000.00**.

---

SIGNATURE REQUIRED ABOVE ACKNOWLEDGING ALLOWANCE

BIDDER agrees to perform all the work described in the BASE BID of the CONTRACT DOCUMENTS for the total sum of

---

AMOUNT WRITTEN IN WORDS

Dollars (\$ \_\_\_\_\_).

AMOUNTS ARE TO BE SHOWN IN BOTH WORDS AND FIGURES. IN CASE OF DISCREPANCY, THE AMOUNT SHOWN IN WORDS SHALL GOVERN.

-----  
\* Insert "a corporation", "a partnership", or "an individual", as applicable.

BIDDER understands that the OWNER reserves the right to reject any or all Bids and to waive any informalities in the Bidding.

The BIDDER agrees that this Bid shall be good and may not be withdrawn for a period of 60 calendar days after the scheduled closing time for receiving Bids.

Upon receipt of written Notice of Acceptance of this Bid, BIDDER will execute the formal Contract within ten (10) days and deliver a Surety Bond or Bonds as required by AIA 101 and AIA 201. The Bid Security attached in the sum of:

---

Dollars (\$ \_\_\_\_\_)

is to become the property of the OWNER in the event the Contract and Bond are not executed within the time set forth as liquidated damages for the delay and additional expense to the OWNER caused thereby.

Respectfully Submitted:

By: \_\_\_\_\_  
Signature

Title: \_\_\_\_\_

Firm Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

(SEAL - if Bid is  
by a Corporation)



DATA TO BE SUBMITTED WITH BID

A. SUPPLEMENTAL INSTRUCTIONS:

The following instructions supplement the requirements of the Information For Bidders and provides instructions for completing the schedules which follow.

1. The Bidder shall submit a list of names and addresses of at least five (5) clients for which the Bidder has constructed similar work of comparable size and complexity. .
  
2. The Bidder shall list in the space provided in Schedule C ALL major subcontractors to be used for construction of the project. Subcontractors so listed shall be used for the contract construction unless their replacement is approved by the Engineer and the Owner.

B. LIST OF PREAPPROVED MAJOR SUBCONTRACTORS:

1. Masonry: \_\_\_\_\_  
Address: \_\_\_\_\_
  
2. Electrical: \_\_\_\_\_  
Address: \_\_\_\_\_
  
3. HVAC Mech.: \_\_\_\_\_  
Address: \_\_\_\_\_
  
4. Plumbing Mech.: \_\_\_\_\_  
Address: \_\_\_\_\_
  
5. Fire Alarm: \_\_\_\_\_  
Address: \_\_\_\_\_
  
6. Civil Site Work: \_\_\_\_\_  
Address: \_\_\_\_\_

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 **AIA<sup>®</sup> Document A701<sup>®</sup> – 2018****Instructions to Bidders**

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

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive  
Evans, GA 30809

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

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

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

Booker + Vick Architects, Inc.  
670 Broad Street  
Augusta, GA 30901

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

**ADDITIONS AND DELETIONS:**

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

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

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

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

## ARTICLE 1 DEFINITIONS

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

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

§ 1.2.1 The parties agree that any contradiction in terms and provisions of the Bidding Documents and the actual AIA Contract and its Addenda shall be resolved by following the provisions or terms in the AIA Contract.

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

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

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

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

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

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

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

## ARTICLE 2 BIDDER'S REPRESENTATIONS

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

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, in Columbia County, Georgia, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents. Please contact Steven Prather, Director of Facilities Design & Construction at 706.829.6335 to visit the site;
- .5 the Bid is based upon furnishing all materials, equipment, labor, and systems required by the Bidding Documents without exception;
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor; and
- .7 If Soil and Subsurface investigations were conducted at the site, a copy of the report is available upon request from the Facilities Design and Construction department. The report is not a part of the bid documents, construction documents or contract documents. Such information is provided for the purpose of disclosure only, and shall not relieve the Contractor from its obligation to investigate the soil and subsurface conditions. The accuracy or completeness of the data is not guaranteed by the Owner or the Architect, and neither the Owner nor the Architect shall be responsible or accept any liability therefore. The Contractor shall not rely on such subsurface information. Bidders shall make their own investigation of subsurface conditions. Any interpretations, conclusions, beliefs and use of this report by

the bidders in preparing your bid is purely a decision made at your our risk. Neither the Owner nor the Architect will be responsible in any way for additional compensation because of the reliance on or assumptions based on the soil investigation data furnished with the Bidding Documents

### **ARTICLE 3 BIDDING DOCUMENTS**

#### **§ 3.1 Distribution**

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

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

Bid Documents may be downloaded free of charge at **columbiacountyga.bonfirehub.com**

*(Paragraph deleted)*

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

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

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

#### **§ 3.2 Modification or Interpretation of Bidding Documents**

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

**§ 3.2.2** Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder online via Bonfire Interactive ([columbiacountyga.bonfirehub.com](http://columbiacountyga.bonfirehub.com)) before **5:00 PM EST on February 28th , 2024** (Wednesday the week before bids are due), and receipt of any/all addenda must be acknowledged prior to contract award.  
**columbiacountyga.bonfirehub.com**

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

#### **§ 3.3 Substitutions**

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

##### **§ 3.3.2 Substitution Process**

**§ 3.3.2.1** Requests for substitutions shall be received online via Bonfire Interactive ([columbiacountyga.bonfirehub.com](http://columbiacountyga.bonfirehub.com)) before **5:00 PM EST on February 28th , 2024** (Wednesday the week before bids are due), and receipt of any/all addenda must be acknowledged prior to contract award. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

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

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

work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

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

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

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

#### § 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to that have registered online via Bonfire Interactive (columbiacountyga.bonfirehub.com) receipt of any/all addenda must be acknowledged prior to contract award columbiacountyga.bonfirehub.com

§ 3.4.2 Addenda will be available online via Bonfire Interactive.

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

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

### ARTICLE 4 BIDDING PROCEDURES

#### § 4.1 Preparation of Bids

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

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

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

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

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

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

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

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

#### § 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:  
(Insert the form and amount of bid security.)

Five Percent (5%)

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

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

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected.

§ 4.2.4.1 **Acceptable Surety Companies:** Only surety companies holding certificates of authority as acceptable sureties on federal bonds and are listed in the latest edition of The Federal Register, Part II, U.S. Department of the Treasury Notices and are listed in the notices as holding surety licenses in the State of Georgia, will be acceptable as sureties for the Project.

#### § 4.3 Submission of Bids

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

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

Electronic bids will be received by the BOARD OF COMMISSIONERS OF COLUMBIA COUNTY, PROCUREMENT DEPARTMENT, 500 FAIRCLOTH DRIVE, EVANS, GEORGIA 30809, until March 7th, 2024, 12:00 PM EST.

Bids are to be submitted electronically via **columbiacountyga.bonfirehub.com** (sealed written bids **WILL NOT** be accepted)

*(Paragraph deleted)*

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

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

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

#### § 4.4 Modification or Withdrawal of Bid

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

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

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

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

## **ARTICLE 5 CONSIDERATION OF BIDS**

### **§ 5.1 Opening of Bids**

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

### **§ 5.2 Rejection of Bids**

The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

### **§ 5.3 Acceptance of Bid (Award)**

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

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

## **ARTICLE 6 POST-BID INFORMATION**

### **§ 6.1 Contractor's Qualification Statement**

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

### **§ 6.2 Owner's Financial Capability**

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

### **§ 6.3 Submittals**

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

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

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

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



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

## ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

### § 7.1 Bond Requirements

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

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

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

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum. The Surety Company shall be authorized to do business in Georgia, and shall be subject to approval by the Attorney for the Owner

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

One Hundred Percent (100%) of the Contract Sum

### § 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than Ten (10) days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

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

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

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

## ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

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

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.  
*(Insert the complete AIA Document number, including year, and Document title.)*
  
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.  
*(Insert the complete AIA Document number, including year, and Document title.)*
  
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.  
*(Insert the complete AIA Document number, including year, and Document title.)*

| (Paragraph deleted)

| .4 Drawings

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

| .5 Specifications

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

| .6 Addenda:

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

| .7 Other Exhibits:

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

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

The Sustainability Plan:

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

Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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| .9 Other documents listed below:

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

# Additions and Deletions Report for

AIA® Document A701® – 2018

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 17:16:57 ET on 01/22/2024.

## PAGE 1

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive  
Evans, GA 30809

...

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

...

Booker + Vick Architects, Inc.  
670 Broad Street  
Augusta, GA 30901

## PAGE 2

§ 1.2.1 The parties agree that any contradiction in terms and provisions of the Bidding Documents and the actual AIA Contract and its Addenda shall be resolved by following the provisions or terms in the AIA Contract.

...

- .4 the Bidder has visited the site, in Columbia County, Georgia, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents; Documents. Please contact Steven Prather, Director of Facilities Design & Construction at 706.829.6335 to visit the site;
- .5 the Bid is based upon ~~the furnishing all materials, equipment, labor, and systems~~ required by the Bidding Documents without exception; ~~and~~
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between ~~the Owner and Contractor;~~ the Owner and Contractor; and
- .7 ~~If Soil and Subsurface investigations were conducted at the site, a copy of the report is available upon request from the Facilities Design and Construction department. The report is not a part of the bid documents, construction documents or contract documents. Such information is provided for the purpose of disclosure only, and shall not relieve the Contractor from its obligation to investigate the soil and subsurface conditions. The accuracy or completeness of the data is not guaranteed by the Owner or the Architect, and neither the Owner nor the Architect shall be responsible or accept any liability therefore. The Contractor shall not rely on such subsurface information. Bidders shall make their own investigation of subsurface conditions. Any interpretations, conclusions, beliefs and use of this report by the bidders in preparing your bid is purely a decision made at your our risk. Neither the Owner nor the Architect will be responsible in any way for additional compensation because of the reliance on or assumptions based on the soil investigation data furnished with the Bidding Documents~~

Bid Documents may be downloaded free of charge at [columbiacountyga.bonfirehub.com](http://columbiacountyga.bonfirehub.com)

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

...

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder ~~in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.~~ online via Bonfire Interactive ([columbiacountyga.bonfirehub.com](http://columbiacountyga.bonfirehub.com)) before 5:00 PM EST on February 28<sup>th</sup>, 2024 (Wednesday the week before bids are due), and receipt of any/all addenda must be acknowledged prior to contract award. *(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)*

[columbiacountyga.bonfirehub.com](http://columbiacountyga.bonfirehub.com)

...

§ 3.3.2.1 ~~Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids.~~ Requests for substitutions shall be received online via Bonfire Interactive ([columbiacountyga.bonfirehub.com](http://columbiacountyga.bonfirehub.com)) before 5:00 PM EST on February 28<sup>th</sup>, 2024 (Wednesday the week before bids are due), and receipt of any/all addenda must be acknowledged prior to contract award. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

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

~~(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)~~ that have registered online via Bonfire Interactive ([columbiacountyga.bonfirehub.com](http://columbiacountyga.bonfirehub.com)) receipt of any/all addenda must be acknowledged prior to contract award  
[columbiacountyga.bonfirehub.com](http://columbiacountyga.bonfirehub.com)

§ 3.4.2 Addenda will be available ~~where Bidding Documents are on file.~~ online via Bonfire Interactive.

...

Five Percent (5%)

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

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

**§ 4.2.4.1 Acceptable Surety Companies:** Only surety companies holding certificates of authority as acceptable sureties on federal bonds and are listed in the latest edition of The Federal Register, Part II, U.S. Department of the Treasury Notices and are listed in the notices as holding surety licenses in the State of Georgia, will be acceptable as sureties for the Project.

...

Electronic bids will be received by the BOARD OF COMMISSIONERS OF COLUMBIA COUNTY, PROCUREMENT DEPARTMENT, 500 FAIRCLOTH DRIVE, EVANS, GEORGIA 30809, until March 7th, 2024, 12:00 PM EST.

Bids are to be submitted electronically via [columbiacountyga.bonfirehub.com](https://columbiacountyga.bonfirehub.com) (sealed written bids **WILL NOT** be accepted)

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

...

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

**PAGE 6**

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

...

~~Unless otherwise prohibited by law, the~~ The Owner shall have the right to reject any or all Bids. A Bid not accompanied by a required bid security or by other data required by the Bidding Documents, or a Bid which is in any way incomplete or irregular is subject to rejection.

...

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

**PAGE 7**

**§ 7.1.4** Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum. The Surety Company shall be authorized to do business in Georgia, and shall be subject to approval by the Attorney for the Owner

...

One Hundred Percent (100%) of the Contract Sum

...

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than ~~three~~ Ten (10) days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

PAGE 8

~~.4~~ — AIA Document E203™ 2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:

(Insert the date of the E203-2013.)

...

~~.5~~ — .4 Drawings

...

~~.6~~ — .5 Specifications

...

~~.7~~ — .6 Addenda:

...

~~.8~~ — .7 Other Exhibits:

# Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 17:16:57 ET on 01/22/2024 under Order No. 4104245988 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A701™ – 2018, Instructions to Bidders, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Dated)

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# AIA® Document A101® – 2017

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

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

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

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

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

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

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Dive.  
Evans, GA 30809

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

Booker + Vick Architects, Inc  
670 Broad Street  
Augusta, GA 30901

The Owner and Contractor agree as follows.

**ADDITIONS AND DELETIONS:**

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

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

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

Init.

/

## TABLE OF ARTICLES

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

EXHIBIT A INSURANCE AND BONDS

EXHIBIT B DRAWINGS INDEX

EXHIBIT C SPECIFICATIONS INDEX

EXHIBIT D ADDENDA

### ARTICLE 1 THE CONTRACT DOCUMENTS

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

### ARTICLE 2 THE WORK OF THIS CONTRACT

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

### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

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

*(Check one of the following boxes.)*

- The date of this Agreement.
- A date set forth in a notice to proceed issued by the Owner.
- Established as follows:  
*(Insert a date or a means to determine the date of commencement of the Work.)*

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

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

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**§ 3.3 Substantial Completion**

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

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

Not later than Seven Hundred and Eighty (780) calendar days from the date of commencement of the Work.

By the following date:

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

Portion of Work	Substantial Completion Date
Additions	540 Days
Renovations	240 Days

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

**ARTICLE 4 CONTRACT SUM**

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

**§ 4.2 Alternates**

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

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

**§ 4.2.2** Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.

*(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)*

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

**§ 4.3** Allowances, if any, included in the Contract Sum:

*(Identify each allowance.)*

Item	Price
General Allowance	One Million Dollars (\$1,000,000)

**§ 4.4** Unit prices, if any:

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

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

**§ 4.5** Liquidated damages, if any:

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

One Thousand Dollars (\$1,000) per Calendar Day if the work is not completed by the specified completion day unless the owner authorizes an extension of time for completion of the work. Should the Contractor fail for any reason to

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achieve total Substantial Completion in the number of calendar days set forth in Section 3.3, the Contractor shall pay liquidated damages (and any attorney's fees, as discussed below) to the Owner in the amount set forth above. The Parties agree that such liquidated damages are a reasonable estimate of the damages which Owner will suffer from such delay. Should litigation arise regarding the Contract Documents or the Work, attorney's fees shall be awarded to the party who prevail in such litigation. An award of liquidated damages under this provision shall not preclude Owner's right to recover attorney's fees. It is understood that the Contractor shall make all reasonable efforts to maintain the current project schedule as included in the contract and subsequent revisions

**§ 4.6 Other:**

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

N/A

**ARTICLE 5 PAYMENTS**

**§ 5.1 Progress Payments**

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

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

(25<sup>th</sup>) Twenty-Fifth Day of the Month

**§ 5.1.3** Provided that an Application for Payment is received by the Architect not later than the 25th day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the 20th day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than Thirty (30) days after the Architect receives the Application for Payment; subject to the approval of Owner, provided that if a lien is filed, payment may be withheld until the lien has been released or properly bonded off.

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

**§ 5.1.3.1** Each Application for Payment shall include a lien release for the current draw request (conditional), current monthly cost report and invoice coverage, letter to Owner certifying that the estimated costs, as indicated on each Monthly Application for Payment are current and sufficient for the completion of construction of the Project; provided, however, neither this estimate nor the payment of any sum shall be deemed acceptance of Work not completed in accordance with the plans and specifications and Contractor shall remain obligated to complete the Work in accordance with the plans and specifications regardless of whether payment has been made.

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

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

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

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

- .1 That portion of the Contract Sum properly allocable to completed Work;
- .2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

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- .3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

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

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

### § 5.1.7 Retainage

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

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

5% (Five Percent)

§ 5.1.7.1.1 The following items are not subject to retainage:

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

N/A

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

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

N/A

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

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

The Retainage of 5% of the contract shall not be reduced, plus the value of any incomplete work. The retainage at Substantial Completion of the entire project will not be reduced until such standard of completion of work has been achieved. The Architect will assign a value equal to 200% of the value of any remaining incomplete or unacceptable Punch List items. The Architect shall determine the value of any such items including appropriate value of any remaining final Close-Out Documents, Warranties, etc. Note: A value of 5% of the Line Item amount on the Continuation Sheet (G703) shall be assessed for each major warranty not furnished for the Project.

The contractor shall, within ten days from the contractor's receipt of retainage from the owner, pass through payments to subcontractors and shall reduce each subcontractor's retainage by the same percentage amount as the contractor's retainage is reduced by the owner; provided, however, that the work of the subcontractor is proceeding satisfactorily and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work, including any warranty work as the contractor in his or her reasonable discretion may require, including, but not limited to, a payment and performance bond.

The subcontractor shall, within ten days from the subcontractor's receipt of retainage from the contractor, pass through payments to lower tier subcontractors and shall reduce each lower tier subcontractor's retainage in the same manner as the subcontractor's retainage is reduced by the contractor; provided, however, that the work of the lower tier subcontractor is proceeding satisfactorily and the lower tier subcontractor has provided or provides such

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satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work, including any warranty work as the subcontractor in his or her reasonable discretion may require, including, but not limited to, a payment and performance bond.

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

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

## § 5.2 Final Payment

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

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

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

No later than thirty (30) days after:

- (a) The Contractor submits to Owner an unconditional lien for the material and labor in connection with this Project for prior month’s pay request. Such lien shall be from the Contractor, each subcontractor and each potential lien claimant and shall be executed and acknowledged before a notary; and
- (b) Completion of the scope of Work under this Agreement, with any amount paid, less the amount determined by the Architect for any incomplete items such as the Architect’s punch work, the units’ respective purchasers’ punch work, and any warranty items; and
- (c) The amount is withheld from final payment to the Contractor at Substantial Completion shall be equal to 200% of the cost to complete the Architect’s punch work, the units’ respective purchasers’ punch work, and any warranty items, with such cost to be determined by the Architect; and
- (d) Owner is in receipt of the **Contractors TWO (2) year warranty** and all warranties and manuals for each subcontractor as related to the close-out documents, which a list of such close-out documents is noted by the specifications such as test reports, redline/as-built drawings/specifications (2 copies) and termite inspection reports; and
- (e) The Contractor submits to Owner the copies of all permits, inspection reports, test reports, signed and approved by the local or regulating authority involving the Project; and
- (f) The Contractor submits the original of all certificates of occupancy, Architect’s inspection reports and Civil Engineers’ certifications; and
- (g) Owner’s receipt of certificates of final completion of the Project from the Project’s architects/engineers certifying that the Project has been substantially completed in accordance with the Contract Documents, subject to a minor punch list; and
- (h) Conditional full and final lien waivers from the Contractor and each subcontractor and potential lien claimant receiving money from the final payment and unconditional full and final waiver of liens from such parties within fifteen (15) working days after receipt of final payment from the Owner; and
- (i) Contractor’s final accounting with the AIA G706, G706A and G707; and
- (j) Contractor has submitted a **bona fide survey** of the as-built condition of all public utilities on the project site to Columbia County Plan Review for approval.

## § 5.3 Interest

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

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

0 % Zero

## ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 Initial Decision Maker

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

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

N/A

### § 6.2 Binding Dispute Resolution

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

*(Check the appropriate box.)*

- Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- Litigation in state and federal law Courts located in Columbia County, Georgia shall have exclusive jurisdiction and venue for any dispute arising from this Agreement.
- Other *(Specify)*

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

## ARTICLE 7 TERMINATION OR SUSPENSION

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

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

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

Contractor shall be entitled to receive payment for Work executed, and purchased materials that cannot be returned for credit, and any other direct costs incurred in performance of the work and by reason of such termination, but there shall be no allowance for overhead and profit on work not yet executed, and there shall be no compensation for any consequential, indirect or special damages.

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

## ARTICLE 8 MISCELLANEOUS PROVISIONS

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

§ 8.1.1 In satisfaction of the requirement of O.C.G.A. 13-10-91, and the Rules of the Georgia Department of Labor relating to the Georgia Security and Immigration Compliance Act of 2006, it is agreed that compliance with the requirement of O.C.G.A. 13-10-91 and rule 300-10-1-.02 are conditions of this Agreement. Attached to this Agreement and made a part hereof by specific reference, is a form entitled "Immigration and Security Form" which is to be completed by the Contractor and all subcontractors. The Contractor shall be responsible for securing from each of the subcontractors, such subcontractor’s completion of the Immigration and Security Form. The Contractor’s compliance with the requirements of O.C.G.A. 13-10-91 and rule 300-10-1-.02, shall be attested by the execution by

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the contractor of the Contractor Affidavit and Agreement, which is attached to and made a part of this Agreement. In the event the Contractor employs or contracts with any subcontractor(s) in connection with this Agreement, which is required to register to verify information on all new employees, the Contractor shall secure from such subcontractor(s), attestation of the subcontractors compliance with O.C.G.A.S. 10-10-91 and Rule 300-10-1-.02 by the subcontractor's execution of the Subcontractor Affidavit shown in Rule 300-10-01.08 or a substantially similar Subcontractor Affidavit and maintain records of such attestation for inspection by the Owner at any time. Such Subcontractor Affidavit shall become a part of the contractor/subcontractor agreement.

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

Steven D. Prather  
PO Box 498  
Evans, Ga. 30809  
sprather@columbiacountyga

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

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

#### § 8.5 Insurance and Bonds

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

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

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:

*(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)*

§ 8.7 Other provisions:

### ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

- .1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, as amended.
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction, as amended.
- .4 Drawings: Exhibit B, Cover Sheet, Drawings Index

*(Paragraphs deleted)*

- .5 Specifications: Exhibit C, Specifications Index

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.6  
(Paragraphs deleted)  
Addenda, if any:

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

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

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

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

The Sustainability Plan:

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

Supplementary and other Conditions of the Contract:

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

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

A201 General Conditions of the Contract for Construction  
Columbia County Proposal/Bid Form  
Invitation to Bid  
A701 Instructions to Bidders  
A310 Bid Bond  
A312 Payment Bond  
A312 Performance Bond

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

\_\_\_\_\_  
**OWNER** (Signature)

Douglas R. Duncan, Jr. Chairman  
Columbia County Board of Commissioners  
\_\_\_\_\_  
(Printed name and title)

\_\_\_\_\_  
**CONTRACTOR** (Signature)

\_\_\_\_\_  
(Printed name and title)

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**Exhibit "B"**  
**Drawings Index**



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**Exhibit "C"**  
**Specifications Index**



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# Additions and Deletions Report for AIA® Document A101® – 2017

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 17:16:12 ET on 01/22/2024.

## PAGE 1

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

...

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive.  
Evans, GA 30809

...

Booker + Vick Architects, Inc  
670 Broad Street  
Augusta, GA 30901

## PAGE 2

**EXHIBIT A INSURANCE AND BONDS**

**EXHIBIT B DRAWINGS INDEX**

**EXHIBIT C SPECIFICATIONS INDEX**

**EXHIBIT D ADDENDA**

...

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

## PAGE 3

Not later than ~~( )~~ Seven Hundred and Eighty (780) calendar days from the date of commencement of the Work.

...

Additions  
Renovations

540 Days  
240 Days

...

General Allowance

One Million Dollars (\$1,000,000)

...

One Thousand Dollars (\$1,000) per Calendar Day if the work is not completed by the specified completion day unless the owner authorizes an extension of time for completion of the work. Should the Contractor fail for any reason to achieve total Substantial Completion in the number of calendar days set forth in Section 3.3, the Contractor shall pay liquidated damages (and any attorney's fees, as discussed below) to the Owner in the amount set forth above. The Parties agree that such liquidated damages are a reasonable estimate of the damages which Owner will suffer from such delay. Should litigation arise regarding the Contract Documents or the Work, attorney's fees shall be awarded to the party who prevail in such litigation. An award of liquidated damages under this provision shall not preclude Owner's right to recover attorney's fees. It is understood that the Contractor shall make all reasonable efforts to maintain the current project schedule as included in the contract and subsequent revisions

**PAGE 4**

N/A

...

(25<sup>th</sup>) Twenty-Fifth Day of the Month

**§ 5.1.3** Provided that an Application for Payment is received by the Architect not later than the 25<sup>th</sup> day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the 20<sup>th</sup> day of the following month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than (—)Thirty (30) days after the Architect receives the Application for Payment. Payment, subject to the approval of Owner, provided that if a lien is filed, payment may be withheld until the lien has been released or properly bonded off.

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

**§ 5.1.3.1** Each Application for Payment shall include a lien release for the current draw request (conditional), current monthly cost report and invoice coverage, letter to Owner certifying that the estimated costs, as indicated on each Monthly Application for Payment are current and sufficient for the completion of construction of the Project; provided, however, neither this estimate nor the payment of any sum shall be deemed acceptance of Work not completed in accordance with the plans and specifications and Contractor shall remain obligated to complete the Work in accordance with the plans and specifications regardless of whether payment has been made.

**PAGE 5**

5% (Five Percent)

...

N/A

...

N/A

...

The Retainage of 5% of the contract shall not be reduced, plus the value of any incomplete work. The retainage at Substantial Completion of the entire project will not be reduced until such standard of completion of work has been achieved. The Architect will assign a value equal to 200% of the value of any remaining incomplete or unacceptable Punch List items. The Architect shall determine the value of any such items including appropriate value of any remaining final Close-Out Documents, Warranties, etc. Note: A value of 5% of the Line Item amount on the Continuation Sheet (G703) shall be assessed for each major warranty not furnished for the Project.

The contractor shall, within ten days from the contractor's receipt of retainage from the owner, pass through payments to subcontractors and shall reduce each subcontractor's retainage by the same percentage amount as the contractor's retainage is reduced by the owner; provided, however, that the work of the subcontractor is proceeding satisfactorily

and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work, including any warranty work as the contractor in his or her reasonable discretion may require, including, but not limited to, a payment and performance bond.

The subcontractor shall, within ten days from the subcontractor's receipt of retainage from the contractor, pass through payments to lower tier subcontractors and shall reduce each lower tier subcontractor's retainage in the same manner as the subcontractor's retainage is reduced by the contractor; provided, however, that the work of the lower tier subcontractor is proceeding satisfactorily and the lower tier subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work, including any warranty work as the subcontractor in his or her reasonable discretion may require, including, but not limited to, a payment and performance bond.

**PAGE 6**

No later than thirty (30) days after:

- (a) The Contractor submits to Owner an unconditional lien for the material and labor in connection with this Project for prior month's pay request. Such lien shall be from the Contractor, each subcontractor and each potential lien claimant and shall be executed and acknowledged before a notary; and
- (b) Completion of the scope of Work under this Agreement, with any amount paid, less the amount determined by the Architect for any incomplete items such as the Architect's punch work, the units' respective purchasers' punch work, and any warranty items; and
- (c) The amount is withheld from final payment to the Contractor at Substantial Completion shall be equal to 200% of the cost to complete the Architect's punch work, the units' respective purchasers' punch work, and any warranty items, with such cost to be determined by the Architect; and
- (d) Owner is in receipt of the **Contractors TWO (2) year warranty** and all warranties and manuals for each subcontractor as related to the close-out documents, which a list of such close-out documents is noted by the specifications such as test reports, redline/as-built drawings/specifications (2 copies) and termite inspection reports; and
- (e) The Contractor submits to Owner the copies of all permits, inspection reports, test reports, signed and approved by the local or regulating authority involving the Project; and
- (f) The Contractor submits the original of all certificates of occupancy, Architect's inspection reports and Civil Engineers' certifications; and
- (g) Owner's receipt of certificates of final completion of the Project from the Project's architects/engineers certifying that the Project has been substantially completed in accordance with the Contract Documents, subject to a minor punch list; and
- (h) Conditional full and final lien waivers from the Contractor and each subcontractor and potential lien claimant receiving money from the final payment and unconditional full and final waiver of liens from such parties within fifteen (15) working days after receipt of final payment from the Owner; and
- (i) Contractor's final accounting with the AIA G706, G706A and G707; and
- (j) Contractor has submitted a **bona fide survey** of the as-built condition of all public utilities on the project site to Columbia County Plan Review for approval.

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0% Zero

...

N/A

...

[ ] — Litigation in a court of competent jurisdiction [X] Litigation in state and federal law Courts located in Columbia County, Georgia shall have exclusive jurisdiction and venue for any dispute arising from this Agreement.

...

Contractor shall be entitled to receive payment for Work executed, and purchased materials that cannot be returned for credit, and any other direct costs incurred in performance of the work and by reason of such termination, but there shall be no allowance for overhead and profit on work not yet executed, and there shall be no compensation for any consequential, indirect or special damages.

...

§ 8.1.1 In satisfaction of the requirement of O.C.G.A. 13-10-91, and the Rules of the Georgia Department of Labor relating to the Georgia Security and Immigration Compliance Act of 2006, it is agreed that compliance with the requirement of O.C.G.A. 13-10-91 and rule 300-10-1-.02 are conditions of this Agreement. Attached to this Agreement and made a part hereof by specific reference, is a form entitled "Immigration and Security Form" which is to be completed by the Contractor and all subcontractors. The Contractor shall be responsible for securing from each of the subcontractors, such subcontractor's completion of the Immigration and Security Form. The Contractor's compliance with the requirements of O.C.G.A. 13-10-91 and rule 300-10-1-.02, shall be attested by the execution by the contractor of the Contractor Affidavit and Agreement, which is attached to and made a part of this Agreement. In the event the Contractor employs or contracts with any subcontractor(s) in connection with this Agreement, which is required to register to verify information on all new employees, the Contractor shall secure from such subcontractor(s), attestation of the subcontractors compliance with O.C.G.A.S. 10-10-91 and Rule 300-10-1-.02 by the subcontractor's execution of the Subcontractor Affidavit shown in Rule 300-10-01.08 or a substantially similar Subcontractor Affidavit and maintain records of such attestation for inspection by the Owner at any time. Such Subcontractor Affidavit shall become a part of the contractor/subcontractor agreement.

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Steven D. Prather  
PO Box 498  
Evans, Ga. 30809  
sprather@columbiacountyga

...

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, as amended.

...

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction, as amended.

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below: Drawings: Exhibit B, Cover Sheet, Drawings Index (Insert the date of the E203–2013 incorporated into this Agreement.)

.5 Drawings

<b>Number</b>	<b>Title</b>	<b>Date</b>
<u>.5</u>	<u>Specifications: Exhibit C, Specifications Index</u>	
<u>.6</u>	<u>Specifications</u>	

<b>Section</b>	<b>Title</b>	<b>Date</b>	<b>Pages</b>
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.7—Addenda, if any:

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~~.8~~ .7 Other Exhibits:

...

~~.9~~ .8 Other documents, if any, listed below:

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

A201 General Conditions of the Contract for Construction

Columbia County Proposal/Bid Form

Invitation to Bid

A701 Instructions to Bidders

A310 Bid Bond

A312 Payment Bond

A312 Performance Bond

...

Douglas R. Duncan, Jr. Chairman  
Columbia County Board of Commissioners

---

...



# **Certification of Document's Authenticity**

**AIA® Document D401™ – 2003**

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 17:16:12 ET on 01/22/2024 under Order No. 4104245988 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A101™ – 2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Title)*

\_\_\_\_\_  
*(Dated)*

**ACORD™ CERTIFICATE OF LIABILITY INSURANCE** DATE (MM/DD/YYYY)

PRODUCER <b>EXAMPLE</b>	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.	
INSURED	INSURERS AFFORDING COVERAGE	NAIC #
	INSURER A:	
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	

**COVERAGES**

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS
		GENERAL LIABILITY <input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS MADE <input type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC				EACH OCCURRENCE \$ <b>1,000,000</b> DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ GENERAL AGGREGATE \$ <b>2,000,000</b> PRODUCTS - COM/OP AGG \$
		AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident) \$ <b>2,000,000</b> BODILY INJURY (Per person) \$ <b>1,000,000</b> BODILY INJURY (Per accident) \$ <b>2,000,000</b> PROPERTY DAMAGE (Per accident) \$ <b>2,000,000</b>
		GARAGE LIABILITY <input type="checkbox"/> ANY AUTO				AUTO ONLY - EA ACCIDENT \$ OTHER THAN AUTO ONLY: EA ACC \$ AGG \$
		EXCESS/UMBRELLA LIABILITY <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> CLAIMS MADE DEDUCTIBLE \$ RETENTION \$				EACH OCCURRENCE \$ AGGREGATE \$ <b>5,000,000</b> \$ \$ \$
A		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below	XXXXX	XXX	XXX	<input type="checkbox"/> WC STATUTORY LIMITS <input type="checkbox"/> OTHER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
		OTHER <b>Builder's Risk</b> <b>Hold Harmless</b>				100% replacement costs of the completed value of the project

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

**Columbia County is listed as additional insured in reference to the project.**

<b>CERTIFICATE HOLDER</b> Columbia County P O Box 498 Evans, GA 30809	<b>CANCELLATION</b> SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL <b>30</b> DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES. AUTHORIZED REPRESENTATIVE
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## EXHIBIT B

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	PHASE 2 - ROOF PHASING PLAN
PH3.0	PHASE 3 - BASEMENT PHASING PLAN
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A0.4	U.L. DESIGNS
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A3.1A	FIRST FLOOR – AREA “A” REFLECTED CEILING PLAN
A3.1B	FIRST FLOOR – AREA “B” REFLECTED CEILING PLAN
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# AIA® Document A201® – 2017

## General Conditions of the Contract for Construction

### for the following PROJECT:

*(Name and location or address)*

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive Evans, GA 30809

### THE OWNER:

*(Name, legal status and address)*

Columbia, County, Georgia  
630 Ronald Reagan Drive, Building B Evans, Georgia 30809

### THE ARCHITECT:

*(Name, legal status and address)*

Booker + Vick Architects, Inc.  
670 Broad Street Augusta, Georgia 30901

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### ADDITIONS AND DELETIONS:

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

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

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User Notes:

(1936739377)



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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

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

#### **§ 1.1.2 The Contract**

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

**§ 1.1.2.1** In addition, while no contractual relationship is created between the Architect/Consultant/Engineer and Owner by this Contract, the Contract does specify binding and enforceable obligations owed by one to the other. Throughout the Contract, wherefore the term "Architect" is used; it shall be noted that the term "Architect" refers to "Architect/Consultant/Engineer."

**§ 1.1.2.2** The Owner makes no representation or warranty of any nature whatsoever to the Contractor concerning the Contract Documents. By the execution hereof, the Contractor acknowledges and represents that it has received, reviewed and carefully examined such documents, has found them to be complete, accurate, adequate, consistent, coordinated, and sufficient for construction and that the Contractor has not, does not, and will not rely upon any representations or warranties by the Owner concerning such documents as no such representations or warranties have been or are hereby made.

#### **§ 1.1.3 The Work**

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

#### **§ 1.1.4 The Project**

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

#### **§ 1.1.5 The Drawings**

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

#### **§ 1.1.6 The Specifications**

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

#### **§ 1.1.7 Instruments of Service**

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



### **§ 1.1.8 Initial Decision Maker**

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

### **§ 1.2 Correlation and Intent of the Contract Documents**

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

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

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

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

### **§ 1.3 Capitalization**

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

### **§ 1.4 Interpretation**

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

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

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

**§ 1.5.1.1** Owner shall have the right to retain, duplicate and use in its business or in the business of any affiliated entity, the plans, drawings, and specifications.

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

### **§ 1.6 Notice**

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

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

### § 1.7 Digital Data Use and Transmission

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

### § 1.8 Building Information Models Use and Reliance

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

## ARTICLE 2 OWNER

### § 2.1 General

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

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

### § 2.2 Evidence of the Owner's Financial Arrangements

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

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

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

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

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

### **§ 2.3 Information and Services Required of the Owner**

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

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

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

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

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

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

**§ 2.3.7** Notwithstanding anything else in this paragraph or elsewhere in the Contract, no obligation of Owner shall relieve the Contractor of Contractor's obligation to perform the Work in accordance with the Contract and in a skillful and workman like manner. Contractor shall be obligated to give prompt notice in writing to Owner of any act or omission which Contractor deems to be a failure by Owner to meet any of its obligations or responsibilities under the Contract so that Owner may make prompt rectification when necessary.

### **§ 2.4 Owner's Right to Stop the Work**

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

### **§ 2.5 Owner's Right to Carry Out the Work**

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

## **ARTICLE 3 CONTRACTOR**

### **§ 3.1 General**

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

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

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

### **§ 3.2 Review of Contract Documents and Field Conditions by Contractor**

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

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

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

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

**§ 3.2.5** The Contractor is responsible for having a thorough knowledge of all drawings, specifications, general supplementary and special conditions and other contract documents. Failure to acquaint itself with this knowledge does not relieve it of the responsibility for performing its Work in a manner acceptable to the Owner. No additional compensation will be allowed because of conditions that occurred due to the failure of the Contractor to familiarize itself and its workers with this knowledge.

### **§ 3.3 Supervision and Construction Procedures**

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

**§ 3.3.1.1** The Contractor agrees, upon the request in writing of the Owner, to change any sequence of Work, provided such change does not cause delay in the Contractor's overall completion of Work or increase in its cost. If such change does cause a delay or alters the Contractor's cost, a change order will be issued extending the time of completion and providing for any increase or decrease in Contractor's direct costs. An extension of time shall be the only remedy for the Contractor due to delay, interruption or change in sequence and any impact therefrom, including delays resulting from Owner's failure to coordinate work.

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

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

### **§ 3.4 Labor and Materials**

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

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

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

### **§ 3.5 Warranty**

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

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

### § 3.6 Taxes

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

### § 3.7 Permits, Fees, Notices and Compliance with Laws

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

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

§ 3.7.2.1 The Contractor shall be responsible for filing Addenda, Surveys, and modifications to the Contract Documents with public authorities having jurisdiction over the Work. Such documents, including periodic drawing revisions and as-built surveys, shall be as required by such authorities.

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

### § 3.7.4 Concealed or Unknown Conditions

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

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

### § 3.8 Allowances

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

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts, labor, and installation cost;
- .2 Contractor's costs for unloading and handling at the site, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but **not in the allowances**; and

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

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

### § 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at all times on the Project site during performance of the Work. The superintendent must be satisfactory to the Owner and shall not be changed except with consent of the Owner unless the superintendent(s) ceases to be employed by the Contractor. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. On request of the Owner, communications from the superintendents to the Owner shall be confirmed in writing.

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

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

### § 3.10 Contractor's Construction and Submittal Schedules

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

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

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

### § 3.11 Documents and Samples at the Site

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

### § 3.12 Shop Drawings, Product Data and Samples

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

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

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

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

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

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

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

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

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

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

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect



have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

**§ 3.12.10.2** If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect. If the Owner or Architect has reasonable objection to a person or entity proposed by Contractor to provide professional services, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection.

**§ 3.12.11** Where Contract Documents require that Work be inspected, tested or approved and when Contractor determines that work is Substantially Complete, it shall give timely notice, including written notice where required. However, should work requiring testing, inspection or approval not be in readiness, Contractor shall pay salaries, professional fees, travel and living expenses, as applicable, for persons inconvenienced by false notice.

### **§ 3.13 Use of Site**

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

### **§ 3.14 Cutting and Patching**

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

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

### **§ 3.15 Cleaning Up**

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

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

### **§ 3.16 Access to Work**

The Contractor shall provide reasonable access to the Contractor's Work and any of the Contractor's files, correspondence, instructions, drawings, calculations, contracts, receipts, memoranda, daily journals, computer records, payroll information, bid documents, books, records, correspondence, payment records, vouchers and other materials (collectively, the "**Records**") relating to the Work. Contractor shall be responsible for insuring that Subcontractors maintain such Records and allow such access. The Contractor hereby grants to Owner the authority to enter its premises for the purpose of such inspection and audit.

### **§ 3.17 Royalties, Patents and Copyrights**

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

### **§ 3.18 Indemnification**

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

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

### **§ 3.19 AS-BUILT DRAWINGS AND SURVEYS**

**§ 3.19.1** The Contractor shall furnish to the Owner through the Architect at the Date of Substantial Completion, one complete set of red-line drawings indicating "as-built" conditions that vary from the Contract Documents. It shall be the responsibility of the Contractor to maintain records of "as-built" conditions as the Work progresses. All underground and otherwise concealed utilities shall be accurately located on the drawings.

**§ 3.19.2** The Contractor shall pay for and furnish to the Owner at Date of Final Completion a bona fide as-built survey of the project. Survey shall locate all structures, paving, utilities and natural features as is customary on an "as-built" survey. This as-built shall be submitted to Columbia County Plan Review in the event that public utilities are changed. Contractor is responsible for receiving an approved set of as-builts from Columbia County Plan Review.

## **ARTICLE 4 ARCHITECT**

### **§ 4.1 General**

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

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

### **§ 4.2 Administration of the Contract**

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

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

**§ 4.2.3** On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not

have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

#### **§ 4.2.4 Communications**

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

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

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

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

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

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

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

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

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

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

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

§ 4.2.14.1 Written request for interpretations (R.F.I.'s) required of the Architect received after noon on the last working day of the Architect's work week shall be acknowledged as received on the Architect's following normal working day.

## **ARTICLE 5 SUBCONTRACTORS**

### **§ 5.1 Definitions**

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

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

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

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

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

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

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

### **§ 5.3 Subcontractual Relations**

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

prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

#### **§ 5.4 Contingent Assignment of Subcontracts**

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

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

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

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

### **ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

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

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

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

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

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

#### **§ 6.2 Mutual Responsibility**

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

**§ 6.2.2** If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the

Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

**§ 6.2.3** The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which were payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction from the Contractor. The Owner shall be responsible to the Contractor for direct costs incurred by the Contractor because of damage to the work, if caused by a separate Contractor not under the direction, supervision or control of Contractor. Any damages to the Contractor because of delays, improperly timed activities, or lack of coordination of the Work shall be remedied solely by an extension of time for performance of the work set forth in 8.3.1.

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

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

### **§ 6.3 Owner's Right to Clean Up**

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

## **ARTICLE 7 CHANGES IN THE WORK**

### **§ 7.1 General**

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

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

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

### **§ 7.2 Change Orders**

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

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

**§ 7.2.2** An allowance for overhead and profit shall be applied to the Net Additional Allowable Expenditures of a Change in Work and shall be included in the total cost to the Owner. These percentages shall be based on the following schedule:

- .1 For the Contractor, for Work performed by the Contractor's own forces, 15% for overhead and profit of the cost of Net Additional Allowable Expenditures.
- .2 For the Contractor, for Work performed by his Subcontractor, 7-1/2% for overhead and profit of the amount due the Subcontractor for Net Additional Allowable Expenditures.
- .3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 15% for overhead and profit for the Net Additional Allowable Expenditures. A Subcontractor shall receive no allowance for overhead and profit on work not performed by his own forces. Under this Contract, the forces

of a Subcontractor of a Subcontractor are deemed to be and are not the forces of the Subcontractor.

## DEFINITION

.4 The above percentage for overhead and profit shall be applied to the "net additional allowable expenditures," if any, as limited and defined herein. If the net difference between "allowable expenditures" and savings results in a decrease in expenditures, the amount of credit allowed the Owner shall be the net decrease without any credit for profit and overhead. "Net additional allowable expenditures" as used herein shall mean the difference between all "allowable expenditures" and savings. The term "allowable expenditures" is limited to and defined as items of labor or materials, the use of heavy construction equipment [such as scrapers, backhoes, excavators, bulldozers, draglines, motor graders, and like equipment], and all such items of cost as public liability and worker's compensation insurance, social security and old age and unemployment insurance, and (in cases where there is an extension of time) pro rata expenditures for time of foremen employed in the direct superintendence of productive labor in execution of changes. All expenditures not included in the term "allowable expenditures" as limited and defined in this article shall be considered as overhead, including, but, not limited to, insurance other than that which is mentioned in this article, bond premiums, supervision, travel (meals, transportation, and lodging) superintendence [except pro rata time of foremen as referred to herein], timekeepers clerks, watchmen, hand tools, small tools, incidental job burdens, engineering, drafting, and office expense including cost of preparing Change Proposal Estimates. Any other provisions in the contract documents to the contrary notwithstanding, only demonstrable, direct, out-of-pocket expenditures for the changes plus percentages as set forth hereinabove shall be allowable for Changes in the Work. No wages of a foreman shall be allowable for change carried on concurrently with contract work unless the claim includes a demand for extension of time caused by the authorizing or ordering of the change.

.5 In order to facilitate the Architect's review of quotations for extras or credits, all proposals, except those so minor that their propriety can't be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner indicated in the attached example at the end of this section. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$10.00 be approved without such itemization. No Proposal Request will be accepted unless it is in such detail as set forth in the attached example. (See Example of Method of Determining Adjustments to the Contract included at the end of this Section).

### § 7.3 Construction Change Directives

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

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

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

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and an allowance for overhead and profit in accordance with 7.2.2 above; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such

case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following, with the exception of markup on insurance premiums and bonds; the cost of the premium shall not be marked up. In no event shall a cost in excess of two (2) percent of the cost of the change be allowable. If the Contractor requests payment for the premium in a change order, the Contractor MUST provide proof of its notification to the Surety of the change in the Work and of the Surety's agreement to include such change in its coverage. Any such change must be in accordance with AIA A201, Article 11, Section 11.1.2.1:

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

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

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

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

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

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

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

#### **§ 7.4 Minor Changes in the Work**

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



## ARTICLE 8 TIME

### § 8.1 Definitions

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

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

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

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

### § 8.2 Progress and Completion

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

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on site or elsewhere prior to the effective date of insurance required in Article 11 to be furnished by the Contractor. The date of commencement of the Work shall not be changed by the effective date of such insurance. The Contractor hereby agrees to subordinate all lien rights to any mortgage or security interest field on the Project and further agrees to execute any documents necessary to effectuate such subordination.

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

### § 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or by any contractor employed by Owner, or by changes ordered in the scope of the Work; or by fire, adverse weather conditions not reasonably anticipated, or any other beyond the control of the Contractor; then the required completion date or duration set forth in the progress schedule shall be extended by the amount of time that the Contractor shall have been delayed thereby. However, to the fullest extent permitted by law, Owner and its agents and employees shall not be held responsible for any loss or damage sustained by Contractor, or subcontractor under the direction, supervision or control of Contractor, or by abnormal weather conditions, or by any other cause, **and Contractor agrees that the sole right and remedy therefore shall be an extension of time.**

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

*(Paragraph deleted)*

§ 8.3.4 In the event the Contractor shall be delinquent in respect to compliance with the time limits established in the Contractor's Construction Schedule (not due to any of the causes indicated in Subparagraph 8.3.1), he shall, within seven days after receipt of written demand of the Owner, provide whatever means necessary, including but not limited to, overtime, extra shifts, additional crews, more resources, etc., until such time as he shall have brought the amount of work in place into compliance with the Contractor's Construction Schedule. Fulfillment of these requirements above (hereinafter referred to as "recovery of lost time required of the Contractor for his breach of the covenant as to time") shall not relieve the Contractor from liability for breach of the covenant as to time (see Article 3.2 of the Form of Agreement between Owner and Contractor). For account of recovery of lost time required of the Contractor for his breach of the covenant as to time, the Contractor shall be entitled to no claim against the Owner.

§ 8.3.5 The Contractor agrees that Work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the Contract Time called for in the Contract Documents. It is expressly understood and agreed that the Contractor has considered all contingencies and factors affecting his ability to perform all the work within this time, including among others, delays caused by normal adverse weather conditions (as detailed in 8.3.6 below) and other possible delays caused by the industrial conditions prevailing in this locality, and after consideration of these factors, he has made an allowance for such factors before agreeing to completion date specified in the Contract Documents, and does further agree that all things considered, such completion date is a reasonable time for completion of all Work to be performed hereunder, without the need for any extension of time for any reasons than those specified in Subparagraph 8.3.1.

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§ 8.3.6 Contract Time will not be extended for normal adverse weather. The time for Substantial Completion as stated in the Contract Documents includes due allowance for calendar days which are considered normal adverse weather condition days.

MONTHLY ANTICIPATED ACTUAL ADVERSE WEATHER (CALENDAR DAYS)

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
5	4	4	4	4	3	4	3	3	2	3	4

**ARTICLE 9 PAYMENTS AND COMPLETION**

**§ 9.1 Contract Sum**

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

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

**§ 9.2 Schedule of Values**

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

**§ 9.3 Applications for Payment**

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

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

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

§ 9.3.1.3 The form of Application for Payment shall be a notarized AIA Document G702, Application and Certificate for Payment, supported by AIA Document G703, Continuation Sheet.

§ 9.3.1.4 Contractor's request for payment received by the twenty-fifth day of the month will be paid by the twentieth day of the following month. Final payment will be made within thirty (30) days after Date of Final Completion and receipt of ALL proper documentation as outlined in the Contract Documents.

§ 9.3.1.5 No payment will be issued without a fully executed lien waiver. This must be accompanied by fully executed lien waivers from all appropriate subcontractors and suppliers involved in the preceding application for payment.

**§ 9.3.1.6** If the Contractor's Application for Payment contains requests for payments for work-in-place or for stored materials and the Architect determines that work-in-place is not complete or material is not properly stored on site, the Architect shall reject the application in total, and Contractor shall resubmit a new application revised as per Architect's determinations. **§ 9.3.2** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

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

**§ 9.3.3.1** In the event a lien or bond claim has been filed or if there exists a potential lien or bond claim situation, the Contractor will be notified by Owner, and the Contractor will resolve the situation to the satisfaction of the Owner. The Contractor agrees to defend and indemnify the Owner against any and all claims for nonpayment of labor or materials against the Project or the property on which it is located.

#### **§ 9.4 Certificates for Payment**

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

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

#### **§ 9.5 Decisions to Withhold Certification**

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

- .1 defective Work not remedied;

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

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

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

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

#### § 9.6 Progress Payments

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

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

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

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

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

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

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

*(Paragraph deleted)*

## § 9.7 Failure of Payment

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

## § 9.8 Substantial Completion

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

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

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

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

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

§ 9.8.5.1 The Owner will make payment within 30 days of the date of Substantial Completion of the amount requested by the Application for Payment that coincides with, or follows, the date the Contractor has achieved Substantial Completion, less the following amount of retainage:

Retainage shall be reduced to **not less than 5% of Contract Amount of the entire Project** plus the Value of any Incomplete Work.

At this time, the Architect will assign a value equal to 200% of the value of any remaining incomplete or unacceptable Punch List items. The Architect shall determine the value of any such items including appropriate value of any remaining final Close-Out Documents, Warranties, etc.

Note: A value of 5% of the Line Item amount on the CONTINUATION SHEET (G703) shall be assessed for each major warranty not furnished for the Project.

## § 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to

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

**§ 9.9.1.1** If the Owner elects to occupy or use any completed or partially completed portion of the work as permitted by paragraph 9.9, the Contractor agrees to cooperate in the segregation and coordination of its construction activities. Such occupancy shall not relieve the Contractor of liabilities to perform work required by the Contract that has not been completed at the time of occupancy.

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

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

#### **§ 9.10 Final Completion and Final Payment**

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

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

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

- § 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from
- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
  - .2 failure of the Work to comply with the requirements of the Contract Documents;
  - .3 terms of special warranties required by the Contract Documents; or
  - .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

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

## ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

### § 10.1 Safety Precautions and Programs

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

§ 10.1.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury, property damage or death to persons resulting from a material or substance encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect verbally and in writing. Contractor shall then proceed as the Architect directs.

### § 10.2 Safety of Persons and Property

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

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

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

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

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

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

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

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

§ 10.2.7.1 In performing the Work, the Contractor shall comply with any storm-water management ordinance (County Standards), statute, regulation applicable to the project, as may be amended from time to time and will take all other measures as are necessary to protect third parties and their property from damage as a result of storm water runoff, silt and erosion emanating from and leaving the land which is the site of the Work. The Contractor shall indemnify and hold the Owner harmless from and against any claim, liability, loss, judgment or expense for damage to person or property arising directly or indirectly from storm water runoff, silt or erosion emanating from and leaving the land which is the site of the Work during the period of time that the Contractor is performing the Work or thereafter if it results from a condition or situation that the Contractor created and failed to remedy at or prior to the time completing the Work. Such indemnification shall include not only the amount of the claim, liability, loss, judgment or expense, but also all costs of investigation and defense including, but not limited to engineering fees to determine the source and extent of the storm water runoff, silt and erosion, expert witness fees, discovery costs, legal fees and court costs.

**§ 10.2.8 Injury or Damage to Person or Property**

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

**§ 10.3 Hazardous Materials and Substances**

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

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

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

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



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

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

#### § 10.4 Emergencies

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

### ARTICLE 11 INSURANCE AND BONDS

#### § 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater.

Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final completion or when the project has been turned over to use by the Owner, and termination of any coverage required to be maintained after final completion, and, with respect to the Contractor's completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

##### 11.1.2.1 Insurance Requirements:

- A. Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:
  1. Premises-Operations
  2. Independent Contractor's Protective Products and Completed Operations
  3. Personal Injury Liability with Employment Exclusion deleted
  4. Contractual - including specified provisions for the Contractor's obligations under Paragraph 3.18
  5. Owned, non-owned, and hired motor vehicles Broad Form Property Damage including Completed Operation Umbrella Excess Liability
- B. If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment and certified in accordance with the AIA contract.
- C. The Insurance required by the project shall be written for not less than the following, or greater if required by law:

1. Worker's Compensation:
  - a. State: Statutory Limit
  - b. Applicable Federal: Statutory Limit
  - c. Employer's Liability: \$1,000,000 without restriction as to whether covered by worker's compensation law.
2. Comprehensive General Liability (including Premises-Operations; Independent Contractor's Protective; Products and Completed Operations: Broad Form Property Damage):
  - a. Bodily Injury:
    - \$1,000,000 Each Occurrence
    - \$2,000,000 Annual Aggregate
  - b. Property Damage:
    - \$1,000,000 Each Occurrence
    - \$2,000,000 Annual Aggregate
  - c. Maintain Products and Completed Operations. Insurance for a period of two years after final

- payment.
- d. Property Damage Liability Insurance
3. Contractual Liability (Hold Harmless Coverage):
    - a. Bodily Injury:
      - \$1,000,000 Each Occurrence
      - \$2,000,000 Annual Aggregate
  4. Personal Injury, with Employment Exclusion detailed:
    - a. \$2,000,000 Annual Aggregate
  5. Comprehensive Automobile Liability (owned, non-owned, hired):
    - a. Bodily Injury:
      - \$1,000,000 Each Person
      - \$2,000,000 Each Occurrence
    - b. Property Damage:
      - \$1,000,000 Each Occurrence
  6. Excess Limits Liability Policy (Umbrella):
    - \$5,000,000.00
  7. The Contractor shall purchase and maintain Builder's Risk Insurance with permission to renovate, if necessary, until the project reaches substantial completion.
    - a. The Contractor shall procure and maintain Builder's Risk insurance on an All Risk or Special Perils basis. Builder's risk coverage shall include coverage for Earthquake, Flood, Wind, Hail, and certified acts of terrorism, covering property under construction, and all materials as stock whether onsite, offsite, or in transit. Local Government, Contractor, and subcontractors at all tiers shall be included as insureds. Local Government shall be included as a loss payee with respect to its insurable interests. Waiver of subrogation shall apply in favor of Local Government, Contractor, and subcontractor of all tiers working on the building project. The Contractor shall waive its subrogation rights in favor of Local Government and other subcontractors of all tiers working on the building project. The Contractor shall assume the liability for the deductible amounts. Such policy will provide for 100% replacement cost of the completed value of the project which encompasses both the new addition and the updated existing building, and the term should be from the inception of the work to final completion and include any testing, if needed. The Contractor shall provide a full copy of the policy to Local Government and all subcontractors working on the building.
  8. Contractor shall provide certified policy endorsements that name the County as an additional insured (except Workman's Compensation and Professional Liability, if applicable) and shall provide that in the event of cancellation or material change in a policy affecting the certificate holder, thirty (30) days prior written notice shall be given to the County except ten (10) days if due to nonpayment.
  9. The insurance certificate shall be furnished on the Comprehensive General Liability policy form, AIA Document G705, Certificate of Insurance, or other forms that are approved by the Owner.

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

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

**§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or

expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

#### **§ 11.1.4.1 PERFORMANCE BOND AND PAYMENT BOND**

**§ 11.1.4.2** The Contractor shall furnish bonds in the form of AIA Document 312 covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be 100% of the Contract Sum.

**§ 11.1.4.3** The Contractor shall deliver the required bonds to the Owner at the same time the Agreement is entered into or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished. Bonds shall bear the same date as the Owner-Contract Agreement.

**§ 11.1.4.4** The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

#### **§ 11.2 Owner's Insurance**

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

*(Paragraphs deleted)*

#### **§ 11.3 Waivers of Subrogation**

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

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

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

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss; however, caused, so long as not caused by an error or omission of the Contractor by someone for whom the Contractor is legally responsible. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

#### **§11.5 Adjustment and Settlement of Insured Loss**

**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to

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requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

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

## **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

### **§ 12.1 Uncovering of Work**

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

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

### **§ 12.2 Correction of Work**

#### **§ 12.2.1 Before Substantial Completion**

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

**§ 12.2.2** Upon written notice from the Architect or Owner, the Contractor shall correct any Work failing to conform to the requirements of the Contract Documents, including any Rejected Work Notices. The Contractor shall begin corrective work within seven days of the receipt of said notice and continue working, with diligence and promptness, until the deficiencies have been brought into compliance with the Contract Documents.

#### **§ 12.2.2 After Substantial Completion**

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

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

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

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

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

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

### § 12.3 Acceptance of Nonconforming Work

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

## ARTICLE 13 MISCELLANEOUS PROVISIONS

### § 13.1 Governing Law

The Contract shall be governed state and federal courts with jurisdiction of Columbia County, Georgia and shall have the exclusive jurisdiction and venue for any dispute arising out of this contract.

### § 13.2 Successors and Assigns

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

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

### § 13.3 Rights and Remedies

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

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

### § 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect

timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

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

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

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

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

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

### § 13.5 Interest

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

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

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

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

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, excluding any consequential, indirect or special damages or loss of profit on work not yet performed.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions

of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

## **§ 14.2 Termination by the Owner for Cause**

**§ 14.2.1** The Owner may terminate the Contract if the Contractor

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

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

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

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

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

## **§ 14.3 Suspension by the Owner for Convenience**

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

**§ 14.3.2** The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall consist of any direct increases in the cost of performance by the Contractor and no adjustment shall be made for increased profit or consequential, indirect, special or delay damages or costs.. No adjustment shall be made to the extent

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

## **§ 14.4 Termination by the Owner for Convenience**

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

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

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

§ 14.4.3 In case of such termination for the Owner's convenience Contractor shall be entitled to receive payment for Work executed, and purchased materials that cannot be returned for credit, and any other direct costs incurred in performance of the work and by reason of such termination, but there shall be no allowance for overhead and profit on work not yet executed, and there shall be no compensation for any other consequential, indirect or special damages.

## **ARTICLE 15 CLAIMS AND DISPUTES**

### **§ 15.1 Claims**

#### **§ 15.1.1 Definition**

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

#### **§ 15.1.2 Time Limits on Claims**

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

#### **§ 15.1.3 Notice of Claims**

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

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

§ 15.1.3.3 A Claim must specify the cause and length of any delay and the length of the requested extension, if any. It is further expressly agreed that the requirement that claims to be initiated in writing may not be waived by any act, omission or verbal statement, and can only be waived by the Owner in writing.

#### **§ 15.1.4 Continuing Contract Performance**

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

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

#### **§ 15.1.5 Claims for Additional Cost**

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4 ;except for emergencies as described in the preceding sentence, the requirements of written notice may not be waived by any act, omission or verbal statement of the Owner.

#### **§ 15.1.6 Claims for Additional Time**

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

Init.



.1 No increase in Contract Time shall be considered or granted for change Orders issued for Work that does not adversely impact the critical path of construction for the Project and can be done concurrently with other work in the Project.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction. No increase in Contract Sum will be made for a Claim accepted by the Owner for an increase in the Contract Time due to abnormal adverse weather conditions

#### § 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive all Claims for consequential, indirect or special damages arising out of or relating to this

*(Paragraphs deleted)*

Contract, including damages for delay. This waiver includes, but is not limited to, lost profits, home office overhead, any form of overhead not directly incurred at the project site, including the compensation of personnel; wage or salary increases; ripple or delay damages; loss of productivity; increased cost of funds for the project; extended capital costs; lost opportunity or work on other projects; inflation costs of labor, material or equipment; non-availability of labor, material or equipment due to delays, loss of financing, business or reputation, increase cost of all consequential, indirect or special damages claimed due to the Owner's termination in accordance with Article 14.

*(Paragraphs deleted)*

#### § 15.1.8 Compliance with Statutes and Regulations

(a) The Contractor shall comply strictly with all applicable local, state or federal statutes, ordinances, rules, and regulations pertaining to the construction of the Project.

(b) *Whistleblower protection.* Section 1553 of Division A, Title XV of the American Recovery and Reinvestment Act of 2009, provides protections for certain individuals who make specific disclosures about uses of Recovery Act funds. Accordingly, Contractor shall post signage that meets this requirement at all job sites regarding this whistleblower provision substantially in the form of the following poster:

<http://www.recovery.gov/Contact/ReportFraud/Documents/Whistleblower%20Poster.pdf>

(c) *Compliance with Copeland Act requirements.* Contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this Agreement.

(d) *Buy American Requirement.* Contractor shall comply with applicable portions of Section 1605 (the "Buy American Requirement") of the American Recovery and Reinvestment Act of 2009.

(e) Contractor shall not under any circumstance apply to or enter into negotiations with any governmental authority or agency for acceptance of variations from or revisions to safety or health, or air, water or noise pollution laws or regulations relating to this Agreement or the performance thereof, without Owner's prior written approval, which approval may be withheld in Owner's sole discretion.

# **Additions and Deletions Report for**

## **AIA® Document A201® – 2017**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

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### **PAGE 1**

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive Evans, GA 30809

...

Columbia, County, Georgia  
630 Ronald Reagan Drive, Building B Evans, Georgia 30809

...

Booker + Vick Architects, Inc.  
670 Broad Street Augusta, Georgia 30901

### **PAGE 6**

1.1.1, 1.1.2, 1.1.21, 1.1.22, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2

### **PAGE 9**

**§ 1.1.2.1** In addition, while no contractual relationship is created between the Architect/Consultant/Engineer and Owner by this Contract, the Contract does specify binding and enforceable obligations owed by one to the other. Throughout the Contract, wherefore the term "Architect" is used; it shall be noted that the term "Architect" refers to "Architect/Consultant/Engineer."

**§ 1.1.2.2** The Owner makes no representation or warranty of any nature whatsoever to the Contractor concerning the Contract Documents. By the execution hereof, the Contractor acknowledges and represents that it has received, reviewed and carefully examined such documents, has found them to be complete, accurate, adequate, consistent, coordinated, and sufficient for construction and that the Contractor has not, does not, and will not rely upon any representations or warranties by the Owner concerning such documents as no such representations or warranties have been or are hereby made.

### **PAGE 10**

**§ 1.5.1.1** Owner shall have the right to retain, duplicate and use in its business or in the business of any affiliated entity, the plans, drawings, and specifications.

### **PAGE 12**

**§ 2.3.7** Notwithstanding anything else in this paragraph or elsewhere in the Contract, no obligation of Owner shall relieve the Contractor of Contractor's obligation to perform the Work in accordance with the Contract and in a skillful and workman like manner. Contractor shall be obligated to give prompt notice in writing to Owner of any act or omission which Contractor deems to be a failure by Owner to meet any of its obligations or responsibilities under the Contract so that Owner may make prompt rectification when necessary.

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

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

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

§ 3.2.5 The Contractor is responsible for having a thorough knowledge of all drawings, specifications, general supplementary and special conditions and other contract documents. Failure to acquaint itself with this knowledge does not relieve it of the responsibility for performing its Work in a manner acceptable to the Owner. No additional compensation will be allowed because of conditions that occurred due to the failure of the Contractor to familiarize itself and its workers with this knowledge.

§ 3.3.1.1 The Contractor agrees, upon the request in writing of the Owner, to change any sequence of Work, provided such change does not cause delay in the Contractor's overall completion of Work or increase in its cost. If such change does cause a delay or alters the Contractor's cost, a change order will be issued extending the time of completion and providing for any increase or decrease in Contractor's direct costs. An extension of time shall be the only remedy for the Contractor due to delay, interruption or change in sequence and any impact therefrom, including delays resulting from Owner's failure to coordinate work.

...

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

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

...

§ 3.7.2.1 The Contractor shall be responsible for filing Addenda, Surveys, and modifications to the Contract Documents with public authorities having jurisdiction over the Work. Such documents, including periodic drawing revisions and as-built surveys, shall be as required by such authorities.

...

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

...

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade ~~discounts; discounts, labor, and installation cost;~~
- .2 Contractor's costs for unloading and handling at the site, ~~labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and~~

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at all times on the Project site during performance of the Work. The superintendent must be satisfactory to the Owner and shall not be changed except with consent of the Owner unless the superintendent(s) ceases to be employed by the Contractor. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. On request of the Owner, communications from the superintendents to the Owner shall be confirmed in writing.

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

**§ 3.12.10.2** If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect. If the Owner or Architect has reasonable objection to a person or entity proposed by Contractor to provide professional services, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection.

**§ 3.12.11** Where Contract Documents require that Work be inspected, tested or approved and when Contractor determines that work is Substantially Complete, it shall give timely notice, including written notice where required. However, should work requiring testing, inspection or approval not be in readiness, Contractor shall pay salaries, professional fees, travel and living expenses, as applicable, for persons inconvenienced by false notice.

...

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

reasonable access to the Contractor's Work and any of the Contractor's files, correspondence, instructions, drawings, calculations, contracts, receipts, memoranda, daily journals, computer records, payroll information, bid documents, books, records, correspondence, payment records, vouchers and other materials (collectively, the "Records") relating to the Work. Contractor shall be responsible for insuring that Subcontractors maintain such Records and allow such access. The Contractor hereby grants to Owner the authority to enter its premises for the purpose of such inspection and audit.

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### **§ 3.19 AS-BUILT DRAWINGS AND SURVEYS**

**§ 3.19.1** The Contractor shall furnish to the Owner through the Architect at the Date of Substantial Completion, one complete set of red-line drawings indicating "as-built" conditions that vary from the Contract Documents. It shall be the responsibility of the Contractor to maintain records of "as-built" conditions as the Work progresses. All underground and otherwise concealed utilities shall be accurately located on the drawings.

**§ 3.19.2** The Contractor shall pay for and furnish to the Owner at Date of Final Completion a bona fide as-built survey of the project. Survey shall locate all structures, paving, utilities and natural features as is customary on an "as-built" survey. This as-built shall be submitted to Columbia County Plan Review in the event that public utilities are changed. Contractor is responsible for receiving an approved set of as-builts from Columbia County Plan Review.

...

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

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**§ 4.2.14.1** Written request for interpretations (R.F.I.'s) required of the Architect received after noon on the last working day of the Architect's work week shall be acknowledged as received on the Architect's following normal working day.

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**§ 6.2.3** The Contractor shall reimburse the Owner for costs the Owner incurs that are Owner shall be reimbursed by the Contractor for costs incurred by the Owner which were payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective ~~construction.~~ construction from the Contractor. The Owner shall be responsible to the Contractor for ~~costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.~~ direct costs incurred by the Contractor because of damage to the work, if caused by a separate Contractor not under the direction, supervision or control of Contractor. Any damages to the Contractor because of delays, improperly timed activities, or lack of coordination of the Work shall be remedied solely by an extension of time for performance of the work set forth in 8.3.1.

...

**§ 7.2.2** An allowance for overhead and profit shall be applied to the Net Additional Allowable Expenditures of a Change in Work and shall be included in the total cost to the Owner. These percentages shall be based on the following schedule:

- .1 For the Contractor, for Work performed by the Contractor's own forces, 15% for overhead and profit of the cost of Net Additional Allowable Expenditures.
- .2 For the Contractor, for Work performed by his Subcontractor, 7-1/2% for overhead and profit of the amount due the Subcontractor for Net Additional Allowable Expenditures.
- .3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 15% for overhead and profit for the Net Additional Allowable Expenditures. A Subcontractor shall receive no allowance for overhead and profit on work not performed by his own forces. Under this Contract, the forces of a Subcontractor of a Subcontractor are deemed to be and are not the forces of the Subcontractor.

#### **DEFINITION**

.4 The above percentage for overhead and profit shall be applied to the "net additional allowable expenditures," if any, as limited and defined herein. If the net difference between "allowable expenditures" and savings results in a decrease in expenditures, the amount of credit allowed the Owner shall be the net decrease without any credit for profit and overhead. "Net additional allowable expenditures" as used herein shall mean the difference between all "allowable expenditures" and savings. The term "allowable expenditures" is limited to and defined as items of labor or materials, the use of heavy construction equipment [such as scrapers, backhoes, excavators, bulldozers, draglines, motor graders, and like equipment], and all such items of cost as public liability and worker's compensation insurance, social security and old age and unemployment insurance, and (in cases where there is an extension of time) pro rata expenditures for time of foremen employed in the direct superintendence of productive labor in execution of changes. All expenditures not included in the term "allowable expenditures" as limited and defined in this article shall be considered as overhead, including, but, not limited to, insurance other than that which is mentioned in this article, bond premiums, supervision, travel (meals, transportation, and lodging) superintendence [except pro rata time of foremen as referred to herein], timekeepers clerks, watchmen, hand tools, small tools, incidental job burdens, engineering, drafting, and office expense including cost of preparing Change Proposal Estimates. Any other provisions in the contract documents to the contrary notwithstanding, only demonstrable, direct, out-of-pocket expenditures for the changes plus percentages as set forth hereinabove shall be allowable for Changes in the Work. No wages of a foreman shall be allowable for change carried on concurrently with contract work unless the claim includes a demand for extension of time caused by the authorizing or ordering of the change.

.5 In order to facilitate the Architect's review of quotations for extras or credits, all proposals, except those so minor that their propriety can't be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner indicated in the attached example at the end of this section. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$10.00 be approved without such itemization. No Proposal Request will be accepted unless it is in such detail as set forth in the attached example. (See Example of Method of Determining Adjustments to the Contract included at the end of this Section).

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- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; an allowance for overhead and profit in accordance with 7.2.2 above; or

...

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the ~~following~~following, with the exception of markup on insurance premiums and bonds; the cost of the premium shall not be marked up. In no event shall a cost in excess of two (2) percent of the cost of the change be allowable. If the Contractor requests payment for the premium in a change order , the Contractor MUST provide proof of its notification to the Surety of the change in the Work and of the Surety's agreement to include such change in its coverage. Any such change must be in accordance with AIA A201, Article 11,Section 11.1.2.1:

∴  
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§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, ~~commence the Work prematurely~~ commence operations on site or elsewhere prior to the effective date of insurance ~~required to be furnished by the Contractor and Owner in Article 11 to be furnished by the Contractor.~~ The date of commencement of the Work shall not be changed by the effective date of such insurance. The Contractor hereby agrees to subordinate all lien rights to any mortgage or security interest field on the Project and further agrees to execute any documents necessary to effectuate such subordination.

...

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, ~~of an employee of either, or of a Separate Contractor;~~ (2) ~~by changes ordered in the Work;~~ (3) ~~by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control;~~ (4) ~~by delay authorized by the Owner pending mediation and binding dispute resolution;~~ or (5) ~~by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine, by any contractor employed by Owner, or by changes ordered in the scope of the Work; or by fire, adverse weather conditions not reasonably anticipated, or any other beyond the control of the Contractor; then the required completion date or duration set forth in the progress schedule shall be extended by the amount of time that the Contractor shall have been delayed thereby. However, to the fullest extent permitted by law, Owner and its agents and employees shall not be held responsible for any loss or damage sustained by Contractor, or subcontractor under the direction, supervision or control of Contractor, or by abnormal weather conditions, or by any other cause, and Contractor agrees that the sole right and remedy therefore shall be an extension of time.~~

...

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

§ 8.3.4 In the event the Contractor shall be delinquent in respect to compliance with the time limits established in the Contractor's Construction Schedule (not due to any of the causes indicated in Subparagraph 8.3.1), he shall, within seven days after receipt of written demand of the Owner, provide whatever means necessary, including but not limited to, overtime, extra shifts, additional crews, more resources, etc., until such time as he shall have brought the amount of work in place into compliance with the Contractor's Construction Schedule. Fulfillment of these requirements above (hereinafter referred to as "recovery of lost time required of the Contractor for his breach of the covenant as to time") shall not relieve the Contractor from liability for breach of the covenant as to time (see Article 3.2 of the Form of Agreement between Owner and Contractor). For account of recovery of lost time required of the Contractor for his breach of the covenant as to time, the Contractor shall be entitled to no claim against the Owner.

§ 8.3.5 The Contractor agrees that Work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the Contract Time called for in the Contract Documents. It is expressly understood and agreed that the Contractor has considered all contingencies and factors affecting his ability to perform all the work within this time, including among others, delays caused by normal adverse weather conditions

(as detailed in 8.3.6 below) and other possible delays caused by the industrial conditions prevailing in this locality, and after consideration of these factors, he has made an allowance for such factors before agreeing to completion date specified in the Contract Documents, and does further agree that all things considered, such completion date is a reasonable time for completion of all Work to be performed hereunder, without the need for any extension of time for any reasons than those specified in Subparagraph 8.3.1.

**§ 8.3.6** Contract Time will not be extended for normal adverse weather. The time for Substantial Completion as stated in the Contract Documents includes due allowance for calendar days which are considered normal adverse weather condition days.

**MONTHLY ANTICIPATED ACTUAL ADVERSE WEATHER (CALENDAR DAYS)**

Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
5	4	4	4	4	3	4	3	3	2	3	4

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**§ 9.3.1.3** The form of Application for Payment shall be a notarized AIA Document G702, Application and Certificate for Payment, supported by AIA Document G703, Continuation Sheet.

**§ 9.3.1.4** Contractor's request for payment received by the twenty-fifth day of the month will be paid by the twentieth day of the following month. Final payment will be made within thirty (30) days after Date of Final Completion and receipt of ALL proper documentation as outlined in the Contract Documents.

**§ 9.3.1.5** No payment will be issued without a fully executed lien waiver. This must be accompanied by fully executed lien waivers from all appropriate subcontractors and suppliers involved in the preceding application for payment.

**§ 9.3.1.6** If the Contractor's Application for Payment contains requests for payments for work-in-place or for stored materials and the Architect determines that work-in-place is not complete or material is not properly stored on site, the Architect shall reject the application in total, and Contractor shall resubmit a new application revised as per Architect's determinations. **§ 9.3.2** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. **§ 9.3.2** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

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**§ 9.3.3.1** In the event a lien or bond claim has been filed or if there exists a potential lien or bond claim situation, the Contractor will be notified by Owner, and the Contractor will resolve the situation to the satisfaction of the Owner. The Contractor agrees to defend and indemnify the Owner against any and all claims for nonpayment of labor or materials against the Project or the property on which it is located.

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**§ 9.6.7** Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both,



under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision. Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

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

#### PAGE 30

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

§ 9.8.5.1 The Owner will make payment within 30 days of the date of Substantial Completion of the amount requested by the Application for Payment that coincides with, or follows, the date the Contractor has achieved Substantial Completion, less the following amount of retainage:

Retainage shall be reduced to not less than 5% of Contract Amount of the entire Project plus the Value of any Incomplete Work.

At this time, the Architect will assign a value equal to 200% of the value of any remaining incomplete or unacceptable Punch List items. The Architect shall determine the value of any such items including appropriate value of any remaining final Close-Out Documents, Warranties, etc.

Note: A value of 5% of the Line Item amount on the CONTINUATION SHEET (G703) shall be assessed for each major warranty not furnished for the Project.

#### PAGE 31

§ 9.9.1.1 If the Owner elects to occupy or use any completed or partially completed portion of the work as permitted by paragraph 9.9, the Contractor agrees to cooperate in the segregation and coordination of its construction activities. Such occupancy shall not relieve the Contractor of liabilities to perform work required by the Contract that has not been completed at the time of occupancy.

#### PAGE 32

§ 10.1.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury, property damage or death to persons resulting from a material or substance encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect verbally and in writing. Contractor shall then proceed as the Architect directs.

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§ 10.2.7.1 In performing the Work, the Contractor shall comply with any storm-water management ordinance (County Standards), statue, regulation applicable to the project, as may be amended from time to time and will take all other measures as are necessary to protect third parties and their property from damage as a result of storm water runoff, silt and erosion emanating from and leaving the land which is the site of the Work. The Contractor shall indemnify and hold the Owner harmless from and against any claim, liability, loss, judgment or expense for damage to person or property arising directly or indirectly from storm water runoff, silt or erosion emanating from and leaving the land which is the site of the Work during the period of time that the Contractor is performing the Work or thereafter if it results from a condition or situation that the Contractor created and failed to remedy at or prior to the time completing the Work. Such indemnification shall include not only the amount of the claim, liability, loss, judgment or expense, but also all costs of investigation and defense including, but not limited to engineering fees to determine the source and extent of the storm water runoff, silt and erosion, expert witness fees, discovery costs, legal fees and court costs.

...

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

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§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final completion or when the project has been turned over to use by the Owner, and termination of any coverage required to be maintained after final completion, and, with respect to the Contractor’s completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents.

**11.1.2.1 Insurance Requirements:**

A. Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:

1. Premises-Operations
2. Independent Contractor’s Protective Products and Completed Operations
3. Personal Injury Liability with Employment Exclusion deleted
4. Contractual - including specified provisions for the Contractor’s obligations under Paragraph 3.18
5. Owned, non-owned, and hired motor vehicles Broad Form Property Damage including Completed Operation Umbrella Excess Liability

B. If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment and certified in accordance with the AIA contract.

C. The Insurance required by the project shall be written for not less than the following, or greater if required by law:

1. Worker’s Compensation:

- a. State: Statutory Limit
- b. Applicable Federal: Statutory Limit
- c. Employer’s Liability: \$1,000,000 without restriction as to whether covered by worker’s

- compensation law.
2. Comprehensive General Liability (including Premises-Operations; Independent Contractor's Protective; Products and Completed Operations: Broad Form Property Damage):
- a. Bodily Injury:
    - \$1,000,000 Each Occurrence
    - \$2,000,000 Annual Aggregate
  - b. Property Damage:
    - \$1,000,000 Each Occurrence
    - \$2,000,000 Annual Aggregate
  - c. Maintain Products and Completed Operations. Insurance for a period of two years after final payment.
  - d. Property Damage Liability Insurance
3. Contractual Liability (Hold Harmless Coverage):
- a. Bodily Injury:
    - \$1,000,000 Each Occurrence
    - \$2,000,000 Annual Aggregate
4. Personal Injury, with Employment Exclusion detailed:
- a. \$2,000,000 Annual Aggregate
5. Comprehensive Automobile Liability (owned, non-owned, hired):
- a. Bodily Injury:
    - \$1,000,000 Each Person
    - \$2,000,000 Each Occurrence
  - b. Property Damage:
    - \$1,000,000 Each Occurrence
6. Excess Limits Liability Policy (Umbrella):
- \$5,000,000.00

7. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents. Builder's Risk Insurance with permission to renovate, if necessary, until the project reaches substantial completion.

- a. The Contractor shall procure and maintain Builder's Risk insurance on an All Risk or Special Perils basis. Builder's risk coverage shall include coverage for Earthquake, Flood, Wind, Hail, and certified acts of terrorism, covering property under construction, and all materials as stock whether onsite, offsite, or in transit. Local Government, Contractor, and subcontractors at all tiers shall be included as insureds. Local Government shall be included as a loss payee with respect to its insurable interests. Waiver of subrogation shall apply in favor of Local Government, Contractor, and subcontractor of all tiers working on the building project. The Contractor shall waive its subrogation rights in favor of Local Government and other subcontractors of all tiers working on the building project. The Contractor shall assume the liability for the deductible amounts. Such policy will provide for 100% replacement cost of the completed value of the project which encompasses both the new addition and the updated existing building, and the term should be from the inception of the work to final completion and include any testing, if needed. The Contractor shall provide a full copy of the policy to Local Government and all subcontractors working on the building.

8. Contractor shall provide certified policy endorsements that name the County as an additional insured (except Workman's Compensation and Professional Liability, if applicable) and shall provide that in the event of cancellation or material change in a policy affecting the certificate holder, thirty (30) days prior written notice shall be given to the County except ten (10) days if due to nonpayment.

9. The insurance certificate shall be furnished on the Comprehensive General Liability policy form, AIA Document G705, Certificate of Insurance, or other forms that are approved by the Owner.

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**§ 11.1.4.1 PERFORMANCE BOND AND PAYMENT BOND**

**§ 11.1.4.2** The Contractor shall furnish bonds in the form of AIA Document 312 covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be 100% of the Contract Sum.

**§ 11.1.4.3** The Contractor shall deliver the required bonds to the Owner at the same time the Agreement is entered into or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished. Bonds shall bear the same date as the Owner-Contract Agreement.

**§ 11.1.4.4** The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

...

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

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

...

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of ~~loss~~; however, caused, so long as not caused by an error or omission of the Contractor by someone for whom the Contractor is legally responsible. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

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

...

§ 12.2.2 Upon written notice from the Architect or Owner, the Contractor shall correct any Work failing to conform to the requirements of the Contract Documents, including any Rejected Work Notices. The Contractor shall begin corrective work within seven days of the receipt of said notice and continue working, with diligence and promptness, until the deficiencies have been brought into compliance with the Contract Documents.

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

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

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

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The Contract shall be governed ~~by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern~~ Section 15.4.state and federal courts with jurisdiction of Columbia County, Georgia and shall have the exclusive jurisdiction and venue for any dispute arising out of this contract.

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

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§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall ~~include profit, consist of any direct increases in the cost of performance by the Contractor and no adjustment shall be made for increased profit or consequential, indirect, special or delay damages or costs..~~ No adjustment shall be made to the extent

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement. convenience Contractor shall be entitled to receive payment for Work executed, and purchased materials that cannot be returned for credit, and any other direct costs incurred in performance of the work and by reason of such termination, but there shall be no allowance for overhead and profit on work not yet executed, and there shall be no compensation for any other consequential, indirect or special damages.

...

§ 15.1.3.3 A Claim must specify the cause and length of any delay and the length of the requested extension, if any. It is further expressly agreed that the requirement that claims to be initiated in writing may not be waived by any act, omission or verbal statement, and can only be waived by the Owner in writing.

...

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under ~~Section 10.4.~~ Section 10.4 :except for emergencies as described in the preceding sentence, the requirements of written notice may not be waived by any act, omission or verbal statement of the Owner.

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.1 No increase in Contract Time shall be considered or granted for change Orders issued for Work that does not adversely impact the critical path of construction for the Project and can be done concurrently with other work in the Project.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction. No increase in Contract Sum will be made for a Claim accepted by the Owner for an increase in the Contract Time due to abnormal adverse weather conditions

...

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

- .1 — damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 — damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's Contract, including damages for delay. This waiver includes, but is not limited to, lost profits, home office overhead, any form of overhead not directly incurred at the project site, including the compensation of personnel; wage or salary increases; ripple or delay damages; loss of productivity; increased cost of funds for the project; extended capital costs; lost opportunity or work on other projects; inflation costs of labor, material or equipment; non-availability of labor, material or equipment due to delays, loss of financing, business or reputation, increase cost of all consequential, indirect or special damages claimed due to the Owner's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

## **§ 15.2 Initial Decision**

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

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

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

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

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

**§ 15.2.6** Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6-1.

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

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

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

## **§ 15.3 Mediation**

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

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

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

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

#### ~~§ 15.4 Arbitration~~

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

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

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

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

#### ~~§ 15.4.4 Consolidation or Joinder~~

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

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



**§ 15.1.8 Compliance with Statutes and Regulations**

(a) The Contractor shall comply strictly with all applicable local, state or federal statutes, ordinances, rules, and regulations pertaining to the construction of the Project.

(b) *Whistleblower protection.* Section 1553 of Division A, Title XV of the American Recovery and Reinvestment Act of 2009, provides protections for certain individuals who make specific disclosures about uses of Recovery Act funds. Accordingly, Contractor shall post signage that meets this requirement at all job sites regarding this whistleblower provision substantially in the form of the following poster:

<http://www.recovery.gov/Contact/ReportFraud/Documents/Whistleblower%20Poster.pdf>

(c) *Compliance with Copeland Act requirements.* Contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this Agreement.

(d) *Buy American Requirement.* Contractor shall comply with applicable portions of Section 1605 (the "Buy American Requirement") of the American Recovery and Reinvestment Act of 2009.

(e) Contractor shall not under any circumstance apply to or enter into negotiations with any governmental authority or agency for acceptance of variations from or revisions to safety or health, or air, water or noise pollution laws or regulations relating to this Agreement or the performance thereof, without Owner's prior written approval, which approval may be withheld in Owner's sole discretion.

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

# Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 17:16:25 ET on 01/22/2024 under Order No. 4104245988 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2017, General Conditions of the Contract for Construction, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Dated)

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 **AIA<sup>®</sup> Document A310™ – 2010****Bid Bond****CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

**BOND AMOUNT: \$****PROJECT:**

*(Name, location or address, and Project number, if any)*

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive  
Evans, GA 30809

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

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

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so

**ADDITIONS AND DELETIONS:**

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

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

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

furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this    day of    ,

\_\_\_\_\_  
*(Witness)*

\_\_\_\_\_  
*(Witness)*

\_\_\_\_\_  
*(Contractor as Principal)*

\_\_\_\_\_  
*(Seal)*

\_\_\_\_\_  
*(Title)*

\_\_\_\_\_  
*(Surety)*

\_\_\_\_\_  
*(Seal)*

\_\_\_\_\_  
*(Title)*

# **Additions and Deletions Report for** **AIA® Document A310™ – 2010**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 17:15:53 ET on 01/22/2024.

## **PAGE 1**

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

...

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive  
Evans, GA 30809

## **Certification of Document's Authenticity**

**AIA® Document D401™ – 2003**

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 17:15:53 ET on 01/22/2024 under Order No. 4104245988 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A310™ – 2010, Bid Bond, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Title)*

\_\_\_\_\_  
*(Dated)*

**SECTION 006000**

**PROJECT FORMS**

**PART 1 - GENERAL**

**1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS**

- A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:
  - 1. AIA Document A101, "Standard Form of Agreement between Owner and Contractor, Stipulated Sum."
    - a. The General Conditions for Project are AIA Document A201, "General Conditions of the Contract for Construction," as edited.
  - 2. The Supplementary Conditions for Project are incorporated into a modified copy of the General Conditions included in the Project Manual.

**1.2 ADMINISTRATIVE FORMS**

- A. Administrative Forms: Additional administrative forms are specified in Division 01 General Requirements.
- B. Copies of AIA standard forms may be obtained from the American Institute of Architects; <http://www.aia.org/contractdocs/purchase/index.htm>; [docspurchases@aia.org](mailto:docspurchases@aia.org); (800) 942-7732.
- C. Preconstruction Forms:
  - 1. Form of Performance Bond and Labor and Material Bond: Owner's forms included in the Project Manual. See Document 006113 – "Performance and Payment Bonds."
  - 2. Form of Certificate of Insurance: Provide forms acceptable to the Owner in accordance with the "General Conditions of the Contract for Construction" Article 11.1.3.
  - 3. Forms for Georgia Security and Immigration Compliance Act: Provide "GSIC Contractor Affidavit and Agreement" and GSIC Subcontractor Affidavit and Agreement" in accordance with the "General Conditions of the Contract for Construction," Article 3.44. Forms are included in the Project Manual.
- D. Information and Modification Forms:
  - 1. Form for Requests for Information (RFIs): Forms acceptable to Architect.
  - 2. Form of Request for Proposal: Forms acceptable to Architect.
  - 3. Change Order Form: AIA Document G701, "Change Order."
  - 4. Form of Change Directive: AIA Document G714, "Construction Change Directive."
- E. Payment Forms:
  - 1. Schedule of Values Form: AIA Document G703, "Continuation Sheet."
  - 2. Payment Application: AIA Document G702/703, "Application and Certificate for Payment and Continuation Sheet."
  - 3. Form of Contractor's Affidavit: AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."



PROPOSED RENOVATION & ADDITION  
COLUMBIA COUNTY JUSTICE CENTER  
EVANS, GEORGIA

4. Form of Affidavit of Release of Liens: AIA Document G706A, "Contractor's Affidavit of Payment of Release of Liens."
5. Form of Consent of Surety: AIA Document G707, "Consent of Surety to Final Payment."

**PART 2 – PRODUCTS (Not Used)**

**PART 3 – EXECUTION (Not Used)**

**END OF SECTION 006000**



**AIA**<sup>®</sup>

# Document A312<sup>®</sup> – 2010

## Payment Bond

**CONTRACTOR:**

*(Name, legal status and address)*

**SURETY:**

*(Name, legal status and principal place of business)*

**OWNER:**

*(Name, legal status and address)*

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

**CONSTRUCTION CONTRACT**

Date:

Amount: \$

Description:

*(Name and location)*

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive  
Evans, GA 30809

**BOND**

Date:

*(Not earlier than Construction Contract Date)*

Amount: \$

Modifications to this Bond:  None  See Section 18

**CONTRACTOR AS PRINCIPAL**

Company: *(Corporate Seal)*

**SURETY**

Company: *(Corporate Seal)*

Signature: \_\_\_\_\_

Name and

Title:

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

Signature: \_\_\_\_\_

Name and

Title:

*(FOR INFORMATION ONLY — Name, address and telephone)*

**AGENT or BROKER:**

**OWNER'S REPRESENTATIVE:**

*(Architect, Engineer or other party:)*

Booker + Vick Architects, Inc.  
670 Broad Street  
Augusta, GA 30901

*(Row deleted)*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## § 16 Definitions

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

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

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

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

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

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

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

§ 18 Modifications to this bond are as follows:

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

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_ (Corporate Seal)

Signature: \_\_\_\_\_  
Name and Title: \_\_\_\_\_  
Address: \_\_\_\_\_

**SURETY**

Company: \_\_\_\_\_ (Corporate Seal)

Signature: \_\_\_\_\_  
Name and Title: \_\_\_\_\_  
Address: \_\_\_\_\_

# Additions and Deletions Report for AIA® Document A312® – 2010

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## PAGE 1

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

...

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive  
Evans, GA 30809

...

Modifications to this Bond:  None  See Section 18

...

Booker + Vick Architects, Inc.  
670 Broad Street  
Augusta, GA 30901

## **Certification of Document's Authenticity**

**AIA® Document D401™ – 2003**

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 17:16:03 ET on 01/22/2024 under Order No. 4104245988 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A312™ – 2010, Payment Bond, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Title)*

\_\_\_\_\_  
*(Dated)*



# AIA® Document A312® – 2010

## Performance Bond

**CONTRACTOR:**

(Name, legal status and address)

**SURETY:**

(Name, legal status and principal place of business)

**OWNER:**

(Name, legal status and address)

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

**CONSTRUCTION CONTRACT**

Date:

Amount: \$

Description:

(Name and location)

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive  
Evans, GA 30809

**BOND**

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:  None  See Section 16

**CONTRACTOR AS PRINCIPAL**

Company: (Corporate Seal)

Signature: \_\_\_\_\_

Name and

Title:

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

**SURETY**

Company: (Corporate Seal)

Signature: \_\_\_\_\_

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

**AGENT or BROKER:****OWNER'S REPRESENTATIVE:**

(Architect, Engineer or other party:)

Booker + Vick Architects, Inc.  
670 Broad Street  
Augusta, GA 30901

(Row deleted)

**ADDITIONS AND DELETIONS:**

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

#### § 14 Definitions

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

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

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

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

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

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

§ 16 Modifications to this bond are as follows:

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

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_ (Corporate Seal)

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address: \_\_\_\_\_

**SURETY**

Company: \_\_\_\_\_ (Corporate Seal)

Signature: \_\_\_\_\_

Name and Title: \_\_\_\_\_

Address: \_\_\_\_\_



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## PAGE 1

Columbia County Georgia  
630 Ronald Reagan Drive  
Building B  
Evans, Georgia 30809

...

Columbia County Justice Center Additions and Renovations  
640 Ronald Reagan Drive  
Evans, GA 30809

...

Modifications to this Bond:  None  See Section 16

...

Booker + Vick Architects, Inc.  
670 Broad Street  
Augusta, GA 30901

## **Certification of Document's Authenticity**

**AIA® Document D401™ – 2003**

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 17:16:49 ET on 01/22/2024 under Order No. 4104245988 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A312™ – 2010, Performance Bond, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Title)*

\_\_\_\_\_  
*(Dated)*



**csra**

TESTING & ENGINEERING CO., INC.

1005 Emmett Street, Suite A, Augusta, Georgia 30904 • (706) 733-6960 • Fax (706) 737-0629

January 31, 2023

Christopher Booker and Associates, PC  
670 Broad Street  
Augusta, Georgia 30901-1436

Attn: Mr. Christopher Booker

Re: Report of Geotechnical Exploration  
Columbia County Justice Center Expansion  
640 Ronald Reagan Drive  
Evans, Georgia 30809  
CSRA Report No. B-151.22

Dear Mr. Booker:

CSRA Testing & Engineering Company, Inc., (CSRA) is pleased to submit this report of our exploration services for the proposed project. Our services were provided in accordance with your authorization of our proposal. This report presents a review of the information provided to us, a discussion of the site and subsurface conditions, and our foundation and earthwork recommendations. The Appendix contains a Boring Location Plan and the results of our field testing.

### **Project Information**

Based on the information provided, the project involves the construction of two-story additions to the existing Columbia County Judicial Center at 640 Ronald Reagan Drive in Evans, Georgia. The additions will be adjacent to the east and west sides of the existing building, and each will have a footprint of approximately 5,100 sf. The existing courthouse is a two-story structure with a basement which daylights to the north. It is our understanding the proposed additions will be two-story structures with no basement. The anticipated loads provided for the additions are 4 to 5 kips/foot for walls and 20 to 120 kips for columns. Based upon the proposed finished floor elevation of 387.4 feet, the east addition will require as much as 10 feet of fill and the west addition will require approximately 1 foot of fill and 4 feet of cut. The project will also include the removal and replacement of an approximate 10-foot-tall retaining wall near the northeast corner of the building, and new pavement to the north and south of the building.

### **Purpose Of Exploration**

The purpose of this exploration was to obtain specific subsurface data at the site and to provide foundation and earthwork recommendations for the proposed project.

### **Site Conditions**

We conducted a site reconnaissance to observe and document surface conditions at the site. Information gathered was used to help us interpret the subsurface data and to detect conditions which could affect our recommendations.

The site is located at 640 Ronald Reagan Drive in Evans, Georgia. An existing two-story courthouse with a daylight basement is on the site. The proposed addition areas are mostly either grassed or landscaped with sidewalks. The ground surface slopes downward in a general easterly direction. There is approximately 9 feet of relief across the east addition area and approximately 5 feet of relief across the west addition area. No surface water was noted on the site at the time of our field work.

### **Site Geologic Conditions**

The project site is located in Georgia's Piedmont Physiographic Province. The soil overburden of this area is residuum formed by in-place weathering of the parent rocks. A typical upland soil profile consists of thin topsoil underlain by a few feet of clayey soils that transition with increasing depth into less clayey, coarser grained silts and sands with varying mica content. Separating the completely weathered soil overburden from the unaltered parent rock is a transition zone of residuum with penetration resistances of more than 100 blows per foot (bpf) which is locally described as partially weathered rock (PWR). The PWR retains much of the appearance and fabric of the parent rock formations and may consist of thinly interlayered very hard or dense soil and rock.

The weathering processes that formed the overburden soils and PWR were extremely variable. Differential weathering of the rock mass has resulted in erratically varying subsurface conditions, evidenced by abrupt changes in soil type and consistency in relatively short horizontal and vertical distances. Although no rock outcrops were noted at the surface, depths to rock can be irregular, and isolated boulders, discontinuous rock layers, or rock pinnacles can be present within the overburden transition zones.

### *Subsurface Conditions*

The subsurface conditions were explored with widely spaced soil test borings drilled according to the procedures presented in the Appendix. The boring locations were selected by the design team, and depths were selected by CSRA. The actual field boring locations were determined by our field crew relative to the property corners. Boring elevations were obtained by interpolation between contours on the drawings provided to us. The boring locations shown in the Appendix should be considered accurate only to the degree implied by the method used.

The subsurface conditions encountered at the boring locations are shown on the test boring records in the Appendix. These boring records represent our interpretation of the subsurface conditions based on the field logs and visual examination of field samples by our geotechnical engineer. The lines designating the interface between various strata on the boring records represent the approximate interface location. Water table levels shown on the boring records represent the conditions only at the time of our exploration.

Five (5) test borings were advanced using our truck-mounted drill rig in the proposed addition/retaining wall areas to depths of 20 to 43 feet below the existing ground surface. The deeper boring was performed for a seismic site classification. Three (3) additional test borings to a depth of 5 feet were placed in the proposed pavement areas. Five (5) hand auger borings with dynamic cone penetrometer tests (HA/DCP) to depths of 6.5 to 10 feet were performed adjacent to the existing building/proposed retaining wall which were inaccessible to our drill rig.

The borings were performed in current grassed and landscaped areas and revealed an upper veneer of topsoil (1 to 3 inches). Fill soils to depths of 1 to 10.5 feet were also found in all the test and hand auger borings with the exception of two (2) shallow test borings to the north and south of the building. The fill soils consisted primarily of sandy clayey silts (ML) with a few clayey (SC) and silty (SM) sand layers. Standard penetration resistances recorded in the fill soils varied from 3 to 14 bpf, indicating the fill was inconsistently compacted. The dynamic cone penetration values in the fill soils adjacent to the building varied from 1 to 15, indicating no compactive effort to well compacted. The majority of the previous ML fill soils adjacent to the building were found to have elevated moisture contents. The unstable and unconsolidated soils were encountered to depths of at least 6 to 10 feet below the existing ground surface adjacent to the existing building. The HA/DCP borings identified previous fills or possible fills to the boring termination depths. Auger refusal was encountered at a depth of 6.5 feet in HA-2 due to an unknown obstruction.



Underlying the topsoil and previous fills, the test borings performed with our truck-mounted drill rig revealed interbedded layers of sandy, clayey silts and sands with varying fine-grained contents. The loose to dense sands varied from very clayey (SC) to silty (SM) with standard penetration resistances of 10 to 44 bpf. Standard penetration resistances of 15 to 54 bpf were recorded in the stiff to very hard sandy, clayey silts (ML) soils. At a depth of 38 feet in B-3, PWR (sampled as a very dense silty sand) was encountered. Auger refusal to competent rock was encountered in B-3 at a depth of 43 feet.

### **Groundwater Conditions**

Groundwater was encountered only in one (1) of the test and HA/DCP borings at a depth of 22 feet at the time of exploration. In silty sands, the water levels can usually be determined accurately near the time of drilling. In fine grained soils and clayey sands, it may take several days for water levels to stabilize. Fluctuations in the groundwater level can occur due to variations in rainfall, evaporation, construction activity, surface runoff, and other site-specific factors. The highest groundwater levels are generally encountered in early spring and the lowest in late summer.

The likelihood of groundwater in the near surface soils can be expected to increase following periods of wet weather due to water infiltration through upper soft/loose soils. The water can then become "perched" on top of the firm soils below. The shallow groundwater encountered in borings B-1 and B-2 appears to be the result of localized, isolated trapped pockets of perched water as described above.

### **Site Preparation Recommendations**

All topsoil, vegetation, debris, and surface soils containing organic material, should be removed from the construction area and either wasted from the site or used as topsoil in areas to be landscaped. The depth of topsoil and unsuitable organic soils encountered in our borings was approximately 1 to 3 inches. The site preparation should also include removal of all existing concrete curb and sidewalk, asphalt pavement, foundations, and utilities from the proposed construction area. Excavations for removal of objectionable material/utilities should be backfilled with properly compacted fill or clean aggregate.

During the stripping and rough grading, positive surface drainage should be maintained to prevent the accumulation of water. If the exposed subgrade becomes excessively wet or frozen, or if conditions are encountered different from those described previously in this report, the geotechnical engineer should be contacted.

After stripping and rough grading, we recommend the subgrade be proofrolled prior to excavation of foundations or placing structural fills. The proofrolling operation should be observed and documented by the construction testing agency. If additional unsuitable conditions are encountered at the subgrade level, recommendations for dealing with the conditions should be provided to the owner's representative by the geotechnical engineer. Any excessively wet and soft soils encountered should be excavated and replaced with properly compacted fill.

### **Foundation Recommendations**

#### **Building Additions**

Shallow and deep foundation systems have been considered for support of the proposed additions. Our experience with similar subsurface conditions with similar structural requirements indicates shallow foundations will not be suitable due to the anticipated long-term total and differential settlements in the existing unstable soils encountered adjacent to the existing building. The removal of the unconsolidated soils and backfilling with compacted structural fill was considered. However, several factors indicate this option may not be feasible including: the depth of unconsolidated soils adjacent to the existing building basement was not determined due to limitations of hand equipment, difficulty achieving adequate compaction of the backfill without damaging the existing basement walls, and additional lateral loads placed on the existing basement walls from the addition's shallow footings.

The use of deep foundations for the additions appears to be a more desirable option. We have analyzed various pile types and sizes using a static analysis based on standard penetration resistances and soil types and consideration of site-constraints. Based on our analysis, we anticipate helical piers or micropiles may be the most cost-effective system to transfer foundations to the more stable soils below the foundations of the existing structure. We recommend contacting a specialist with these type of deep foundations to determine the costs and feasibility of these options. This report should be provided to the specialist for their use. Additional soil strength parameters can be provided at a later time, if needed.

### **Retaining Wall**

We recommend a shallow spread footing be utilized to support the proposed retaining wall footing. This foundation should extend below the poorly compacted fill and bear at a depth of 3 feet in the firm ML soils as observed in B-3. This footing can be designed for a maximum allowable net bearing pressure of 2,000 psf. The maximum net allowable bearing pressure recommended is based on our previous experience and correlations made previously between standard penetration test resistances and the performance of foundations supported by soils similar to those at this site. We expect total settlements on the order of 1 inch and differential settlements of less than 0.5 inch.

We recommend the construction testing agency observe the footing excavation immediately prior to placing concrete. They should compare the soils exposed with those encountered in the soil test borings and document the results. Any significant differences should be brought to the attention of the owners' representative along with appropriate recommendations. The foundation bearing area should be level or suitably benched. It should also be free of loose soil, ponded water, and debris prior to the inspection.

### **Site Seismic Recommendations**

We recommend a site classification 'C' be utilized for seismic design for this project per the International Building Code (IBC). This is based on the weighted average of the 'N' values obtained (and estimated based on known geologic conditions) within the upper 100 feet of soil below the site. The weighted average 'N' value was calculated to be over 50 blows per foot. This correlates to a site classification of 'C' per the IBC.

### **Grade Slab Recommendations**

We understand a soil supported grade slab will be used for the proposed structures. The grade slab should be jointed around columns so that the slab and foundations can settle differentially without damage. Joints containing dowels or keys may be used in the slab to permit rotational movement between parts of the slab without cracking or sharp vertical displacements.

A 4 to 6 inch layer of clean gravel or free draining sand covered with an impermeable membrane should be placed beneath the grade slab to provide a vapor barrier and permit lateral drainage beneath the slab.

Piping underneath the grade slab should be avoided whenever possible. Where absolutely necessary, pipe joints must be tight to prevent leakage. Leakage from under floor piping is often the source of excessive soil moisture which can lead to damage due to potential soil expansion or erosion.

Construction activities and exposure to the environment can cause deterioration of prepared subgrades. Therefore, we recommend density and moisture content tests be conducted on the final subgrade soils immediately prior to grade slab construction to determine their condition.

### **Compacted Fill Recommendations**

We recommend soils used as compacted fills be free of debris and have less than 3% by weight fibrous organic material. They should have a maximum dry density of at least 90 pcf, a liquid limit of less than 50, and a plasticity index of less than 20. Before filling operations begin, representative samples of each proposed fill material should be collected. The samples should be tested to determine the maximum dry density, optimum moisture content, natural moisture content, gradation, and plasticity of the soil. These tests are needed for quality control during compaction and also to determine if the fill material is acceptable. Visual observation indicates the near surface soils in the cut areas of the site can be re-used as fill. However, these fine-grained soils are very moisture sensitive, and they may require drying prior to re-use as structural fill during wetter periods of the year. Our past experience has shown these soils may take an extended period of time to dry.

We recommend all compacted fill be constructed by spreading acceptable soil in loose layers not more than 10 inches thick. The fill should be compacted in thin lifts to at least 95 percent of the Standard Proctor maximum dry density (ASTM D-698). The moisture content of the fill soils should be maintained within +3 and -3 percentage points of the optimum moisture content as determined from the proctor compaction test. This provision may require the contractor to dry the soils during periods of wet weather or wet the soils during the hot summer months.

We recommend the fill placement and compaction be observed and documented by the construction testing agency. Significant deviations, either from specifications or good practice, should be brought to the attention of the owner's representative, along with appropriate recommendations. At least one (1) field density test should be performed in each 5,000 square feet of fill for each fill layer.

**Earth Pressure Recommendations**

The project will require below grade walls which must be designed to resist soil pressures imposed on them. Walls which are permitted to rotate away at the top may be designed to resist “active” lateral earth pressure. Typically, a top rotation of about 1 inch per 10 feet of wall height is sufficient to develop an active pressure condition. Walls that will be prevented from rotating should be designed using the “at-rest” lateral earth pressure. The earth pressure coefficients for both the “active” and “at-rest” conditions will depend on the type of backfill that is used. To account for the “active” and “at-rest” lateral pressures of retained earth, we recommend the permanent retaining system design assume the soils behind the bracing system will apply a triangular stress distribution based on the depth and the following strength parameters for the natural soils encountered at this site:

<b>Material</b>	<b>Unit Weight (pcf)</b>	<b>Effective Friction Angle (degrees)</b>	<b>Cohesion (psf)</b>
On-Site ML	130	15	1,500
On-Site SM	125	29	0
On-Site SC	135	24	600

The compacted mass unit weight of the soil should be used with the above soil parameters to calculate the corresponding earth pressure coefficients and lateral earth pressures. The above values are actual anticipated values and do not contain any safety factors. Backfill behind permanent walls should be compacted in accordance with the compacted fill section of this report. A 4-inch layer of clean aggregate (#57 stone) or a geocomposite drain may be installed behind the walls to avoid the buildup of hydrostatic pressures.

The lateral pressures developed by surcharge loads from existing or proposed foundations, stored material, stockpiled soils, etc. must be added to the lateral soil stresses to determine the horizontal loads which must be resisted. In addition, transient loads imposed on the walls by construction equipment during construction must be considered. Excessively heavy equipment that could impose temporary excessive pressures or long term excessive residual pressures against the constructed walls should not be allowed within approximately 5 feet of the walls

### **Pavement Recommendations**

No subgrade strength tests have been performed at this time. However, based on our experience with similar conditions, we recommend a design CBR value of 4 be used for preliminary thickness determinations for pavements supported by the near surface sandy, clayey silts (ML). The actual values should be confirmed by testing prior to the actual construction. If pavements or sections of pavements are to be constructed on compacted fill, we recommend the fill material be placed slightly dry of optimum moisture content.

The base course and asphalt concrete course materials should comply with and should be constructed in accordance with the Georgia Department of Transportation Standard Specifications.

We recommend the exposed subgrade in the pavement areas be proofrolled to detect unsuitable soil conditions. Proofrolling should be done just prior to paving and after a suitable period of dry weather to avoid degrading an otherwise acceptable subgrade. A heavily loaded dump truck or similar approved construction equipment should make at least four (4) passes over each section, with the last two (2) passes perpendicular to the first two (2).

### **Infiltration Estimates**

One (1) double ring infiltrometer test (ASTM D-3385) was performed to the north of the existing building beyond Faircloth Drive. The infiltrometer tests were performed by seating the outer ring approximately 4 inches into the ground surface. The inner ring and annular ring spaces were filled with water. The drop in water level was measured at time increments of 15 minutes and recorded until a constant rate was achieved. The measurements showed an infiltration rate of 0.125 inch/hour.

### **Basis For Recommendations**

The recommendations provided are based in part on project information provided to us and they only apply to the specific project and site discussed in this report. If the project information section in this report contains incorrect information or if additional information is available, you should convey the correct or additional information to us and retain us to review our recommendations. We can then modify our recommendations if they are inappropriate for the proposed project.


Mr. Christopher Booker  
Page Ten  
January 31, 2023

Regardless of the thoroughness of a geotechnical exploration, there is always a possibility conditions between borings will be different from those at specific boring locations and that conditions will not be as anticipated by the designers or contractors. In addition, the construction process may itself alter soil conditions. Therefore, experienced geotechnical personnel should observe and document the construction procedures used and the conditions encountered. Unanticipated conditions and inadequate procedures should be reported to the design team along with timely recommendations to solve the problems created. We recommend the owner retain CSRA to provide this service based upon our familiarity with the project, the subsurface conditions and the intent of the recommendations.

We wish to remind you our exploration services include storing the samples collected and making them available for inspection for 60 days. The samples are then discarded unless you request otherwise.

We will be happy to discuss our recommendations with you and would welcome the opportunity to provide the additional studies or services necessary to complete this project. We appreciate the opportunity to provide our professional services and look forward to working with you on the remainder of this project and on future projects. If you have any questions concerning this report or wish to have further discussions, please contact us at (706) 733-6960.

Respectfully submitted,

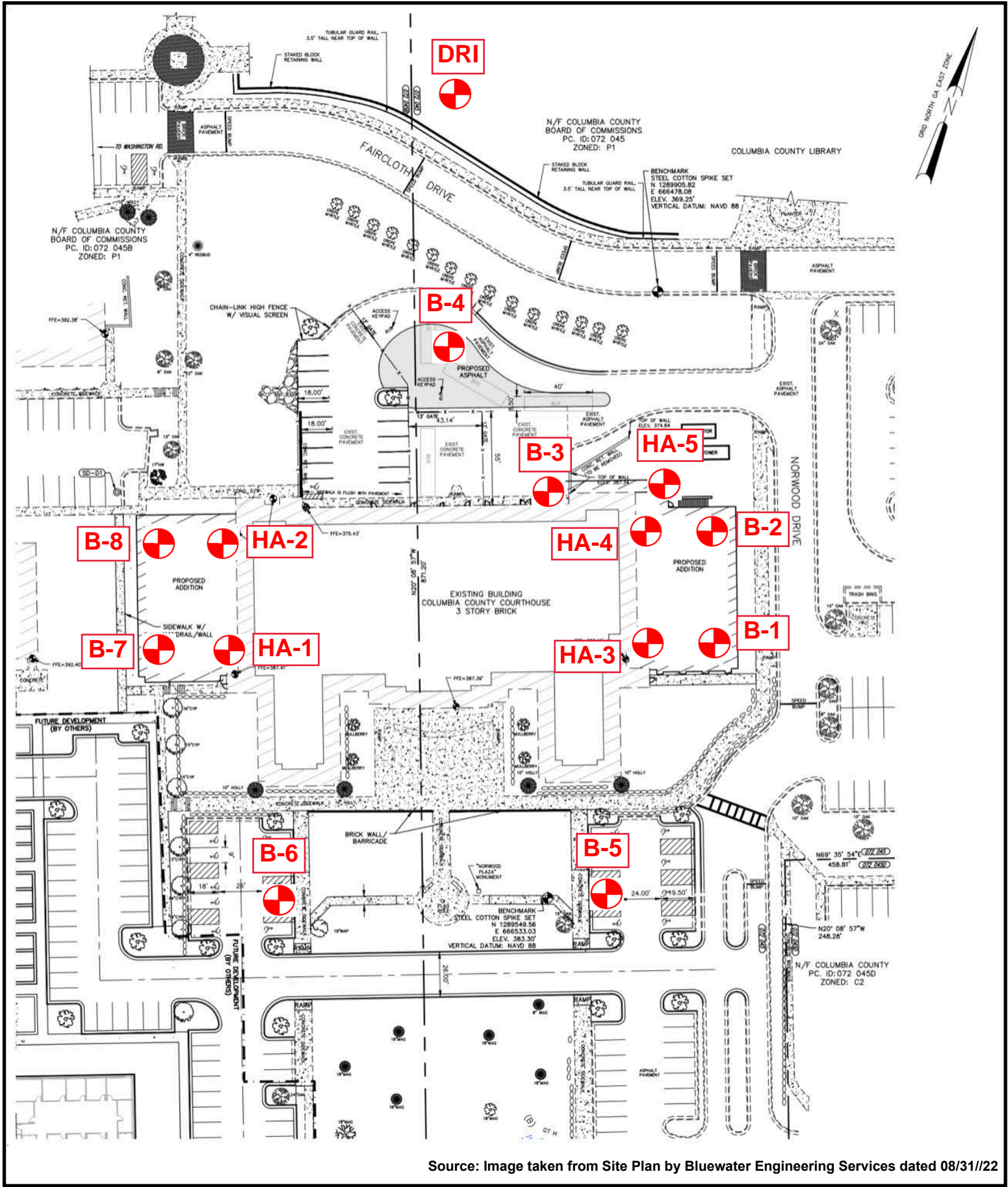


Jonathan E. Pruet, P.E.

# **APPENDICES**



**APPENDIX I**  
*Boring Location Plan*



Source: Image taken from Site Plan by Bluewater Engineering Services dated 08/31/22

**csra**  
**TESTING & ENGINEERING CO., INC.**  
 1005 EMMETT STREET, SUITE A \* AUGUSTA, GEORGIA 30904 \* (706) 733-6960

**Boring Location Plan**  
 Columbia County Justice Center Addition  
 640 Ronald Regan Drive  
 Evans, Georgia

JOB NO. B-151.22	DESIGNED BY
SCALE NTS	DRAWN BY JEP
DATE 12/22/22	CHECKED BY MWP

**APPENDIX II**  
*Soil Boring Logs*



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PROJECT Columbia County Justice Center Expansion BORING NO. B-1

LOCATION Evans, Georgia DATE December 3, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
5'	Firm to Stiff, Reddish-Brown Sandy Clayey Silt (Moist) (Fill)	8 @ 1' 10 @ 3.5' 14 @ 6'	ML	
10'	Stiff, Gray and Tan Sandy Clayey Silt with Mica (Fill)	25 @ 8.5'	ML	
15'	Very Firm, Tan and Red Very Clayey Sand		SC	
15'	Hard, Reddish-Brown and Tan Sandy Clayey Silt	37 @ 13.5'	ML	
20'	Dense, Tan and Red Silty Sand	44 @ 18.5'	SM	
25'	Boring Terminated at 20 feet. Upper 2" is Topsoil.			
30'				
35'				
40'				

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.

0-1' PERCHED WATER TABLE AT TIME OF BORING



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PROJECT Columbia County Justice Center Expansion BORING NO. B-2

LOCATION Evans, Georgia DATE December 3, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
5'	Reddish-Tan Sandy Clayey Silt (Wet) (Fill)	8 @ 1'	ML	
	Loose, Tan and Brown Silty Sand (Wet) (Fill)		SM	
10'	Stiff, Reddish-Brown and Gray Sandy Clayey Silt (Moist) (Fill)	10 @ 3.5'	ML	
		14 @ 6'		
15'	Brownish-Tan Very Clayey Sand	32 @ 13.5'	SC	
	Hard, Reddish-Tan and Black Sandy Clayey Silt		ML	
20'	Very Firm, Reddish-Tan Silty Sand	24 @ 18.5'	SM	
25'	Boring Terminated at 20 feet. Upper 3" is Topsoil.			
30'				
35'				
40'				

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.

0-1' PERCHED WATER TABLE AT TIME OF BORING



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PROJECT Columbia County Justice Center Expansion BORING NO. B-3 (Page 1 of 2)

LOCATION Evans, Georgia DATE December 3, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
5'	Soft, Reddish-Brown and Tan Sandy Clayey Silt (Moist) (Fill)	3 @ 1'	ML	
	Brown Clayey Sand (Wet) (Fill)	7 @ 3.5'	SC	
10'	Firm, Reddish-Brown Clayey Silt (Fill)		25 @ 6'	ML
	Very Stiff, Reddish-Tan Sandy Clayey Silt	19 @ 8.5'	ML	
15'	Loose, Light Reddish-Tan Silty Sand with Mica	10 @ 13.5'	SM	
20'	Firm, Tan and Gray Silty Sand with Mica	11 @ 18.5'	SM	
25'	Loose, Tan, Gray, and White Silty Sand with Mica and Quartz (Wet)	10 @ 23.5'	SM	
30'	Very Stiff, Gray and Tan Micaceous Clayey Silt	24 @ 28.5'	ML	
35'	Dense, Tan, Red, and Gray Silty Sand with Mica and Quartz	39 @ 33.5'	SM	
40'	Very Dense, Tan, Red, and Gray Silty Sand with Mica (Partially Weathered Rock)	Spoon Refusal @ 38.5	SM	

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.



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PROJECT Columbia County Justice Center Expansion BORING NO. B-3 (Page 2 of 2)

LOCATION Evans, Georgia DATE December 3, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
	Very Dense, Tan, Red, and Gray Silty Sand with Mica (Partially Weathered Rock)		SM	
45'	Auger Refusal at 43 feet. Upper 3" is Topsoil.			
50'				
55'				
60'				
65'				
70'				
75'				
80'				

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.

22' WATER TABLE AT TIME OF BORING





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PROJECT Columbia County Justice Center Expansion BORING NO. B-4

LOCATION Evans, Georgia DATE December 3, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
5'	Very Stiff, Reddish-Brown Sandy Clayey Silt	18 @ 1' 24 @ 3.5'	ML	
5'	Boring Terminated at 5 feet. Upper 3" is Topsoil.			
10'				
15'				
20'				
25'				
30'				
35'				
40'				

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.

NO WATER TABLE AT TIME OF BORING





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PROJECT Columbia County Justice Center Expansion BORING NO. B-5

LOCATION Evans, Georgia DATE December 3, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
	Reddish-Brown Sandy Clayey Silt (Fill)	11 @ 1'	ML	
	Stiff to Very Stiff, Reddish-Brown Sandy Clayey Silt with Gravel	29 @ 3.5'	ML	
5'	Boring Terminated at 5 feet. Upper 2" is Topsoil.			
10'				
15'				
20'				
25'				
30'				
35'				
40'				

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.

NO WATER TABLE AT TIME OF BORING



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PROJECT Columbia County Justice Center Expansion BORING NO. B-6

LOCATION Evans, Georgia DATE December 3, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
5'	Stiff to Very Stiff, Reddish-Tan Sandy Clayey Silt	15 @ 1' 22 @ 3.5'	ML	
5' - 40'	Boring Terminated at 5 feet. Upper 2" is Topsoil.			

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.

NO WATER TABLE AT TIME OF BORING



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PROJECT Columbia County Justice Center Expansion BORING NO. B-7

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
5'	Firm to Stiff, Reddish-Brown and Tan Sandy Clayey Silt with Mica (Fill)	7 @ 1' 13 @ 3.5' 33 @ 6'	ML	
10'	Hard to Very Hard, Dark Reddish-Brown Sandy Clayey Silt	54 @ 8.5'	ML	
15'		43 @ 3.5'		
20'	Firm, Reddish-Tan Silty Sand with Mica	15 @ 18.5'	SM	
25'	Firm, Tan and Gray Silty Sand with Mica	15 @ 23.5'	SM	
30'	Stiff, Brownish-Tan and Black Micaceous Clayey Silt	14 @ 23.5'	ML	
35'	Boring Terminated at 30 feet. Upper 1" is Topsoil.			
40'				

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.

NO WATER TABLE AT TIME OF BORING



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PROJECT Columbia County Justice Center Expansion BORING NO. B-8

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	PENETRATION VALUE (N)	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
	Firm, Reddish-Brown Sandy Clayey Silt with Some Roots (Fill)	6 @ 1'	ML	
	Loose, Reddish-Tan Silty Sand with Gravel (Fill)	6 @ 3.5'	SM	
5'	Very Stiff, Reddish-Brown and Tan Sandy Clayey Silt with Gravel	27 @ 6'	ML	
10'	Very Stiff to Hard, Dark Reddish-Brown Sandy Clayey Silt with Quartz	30 @ 8.5'	ML	
15'		34 @ 3.5'		
20'	Very Firm, Reddish-Tan Silty Sand with Mica and Quartz	21 @ 18.5'	SM	
25'	Firm, Tan and Gray Silty Sand with Mica	16 @ 23.5'	SM	
30'		16 @ 28.5'		
35'	Boring Terminated at 30 feet. Upper 1" is Topsoil.			
40'				

N Value is number of blows of 140 pound hammer required to drive 2" split-tube sampler one foot after seated.

NO WATER TABLE AT TIME OF BORING



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PROJECT Columbia County Justice Center Expansion BORING NO. HA-1 (Page 1 of 2)

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
1'	Soft to Very Soft, Reddish-Brown and Tan Sandy Clayey Silt with Gravel (Wet) (Fill)	4 @ 1'	ML	
2'		3 @ 2'		
3'		1 @ 3'		
4'		1 @ 4'		
5'		1 @ 5'		
6'		1 @ 6'		
7'		1 @ 7'		
8'		2 @ 8'		

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.



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PROJECT Columbia County Justice Center Expansion BORING NO. HA-1 (Page 2 of 2)

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
9'	Soft to Very Soft, Reddish-Brown and Tan Sandy Clayey Silt with Gravel (Wet) (Fill)	1 @ 9'	ML	
10'	Boring Terminated at 10 feet. Upper 2" is Topsoil.	1 @ 10'		
11'				
12'				
13'				
14'				
15'				
16'				

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.



TESTING & ENGINEERING CO., INC.

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PROJECT Columbia County Justice Center Expansion BORING NO. HA-2

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
1'	Soft to Firm, Reddish-Brown Sandy Clayey Silt with Gravel (Moist) (Fill)	3 @ 1'	ML	
2'		3 @ 2'		
3'		3 @ 3'		
4'		2 @ 4'		
5'		2 @ 5'		
6'		7 @ 6'		
7'	Hand Auger Refusal at 6.5 feet. Upper 1" is Topsoil.			
8'				

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.



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PROJECT Columbia County Justice Center Expansion BORING NO. HA-3 (Page 1 of 2)

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
1'	Soft to Very Soft, Reddish-Brown Sandy Clayey Silt with Gravel (Fill)	2 @ 1'	ML	
2'		2 @ 2'		
3'		1 @ 3'		
4'		1 @ 4'		
5'		1 @ 5'		
6'		3 @ 6'		
7'	Stiff, Reddish-Brown and Tan Sandy Clayey Silt (Possible Fill)	10 @ 7'	ML	
8'		13 @ 8'		

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.





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PROJECT Columbia County Justice Center Expansion BORING NO. HA-3 (Page 2 of 2)

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
9'	Soft to Very Stiff, Reddish-Brown and Tan Sandy Clayey Silt (Possible Fill)	12 @ 9'	ML	
10'	Boring Terminated at 10 feet. Upper 3" is Topsoil.	15 @ 10'		
11'				
12'				
13'				
14'				
15'				
16'				

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.



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PROJECT Columbia County Justice Center Expansion BORING NO. HA-4 (Page 1 of 2)

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
1'	Soft to Very Soft, Reddish-Brown and Tan Sandy Clayey Silt with Mica and Gravel (Wet) (Fill)	2 @ 1'	ML	
2'		3 @ 2'		
3'		2 @ 3'		
4'		1 @ 4'		
5'		1 @ 5'		
6'		2 @ 6'		
7'		1 @ 7'		
8'		2 @ 8'		

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.



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PROJECT Columbia County Justice Center Expansion BORING NO. HA-4 (Page 2 of 2)

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
9'	Soft to Very Soft, Reddish-Brown and Tan Sandy Clayey Silt with Mica (Wet) (Fill)	1 @ 9'	ML	
10'	Boring Terminated at 10 feet. Upper 2" is Topsoil.	1 @ 10'		
11'				
12'				
13'				
14'				
15'				
16'				

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.



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PROJECT Columbia County Justice Center Expansion BORING NO. HA-5 (Page 1 of 2)

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
1'		1 @ 1'		
2'		2 @ 2'		
3'	Very Soft to Firm, Reddish-Brown Sandy Clayey Silt with Mica (Moist) (Fill)	1 @ 3'	ML	
4'		2 @ 4'		
5'		5 @ 5'		
6'	Very Soft, Brown and Red Sandy Clayey Silt with Plastic (Fill)	1 @ 6'	ML	
7'	Very Soft to Soft, Reddish-Brown Sandy Clayey Silt (Fill)	2 @ 7'	ML	
8'		3 @ 8'		

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.



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PROJECT Columbia County Justice Center Expansion BORING NO. HA-5 (Page 2 of 2)

LOCATION Evans, Georgia DATE December 10, 2022

DEPTH FEET	VISUAL SOIL DESCRIPTION	DCP VALUE	VISUAL UNIFIED CLASS.	PERCENT MOISTURE
9'	Very Soft to Soft, Reddish-Brown Sandy Clayey Silt Silt with Mica (Wet) (Fill)	2 @ 9'	ML	
10'	Boring Terminated at 10 feet. Upper 2" is Topsoil.	2 @ 10'		
11'				
12'				
13'				
14'				
15'				
16'				

N Value is number of blows of 15-pound hammer falling 20 inches to drive cone penetrometer 1.75 inches after seating.

**APPENDIX III**  
*Field Testing Procedures*

## **FIELD TESTING PROCEDURES**

### **SOIL TEST BORINGS**

Soil sampling and penetration testing were performed in general accordance with ASTM D 1586.

The borings were made by mechanically twisting a continuous steel flight hollow stem auger into the soil. At regular intervals, soil samples obtained with a standard 1.4 inch I.D., 2 inch O.D., split-barrel sampler. The sampler was first seated 6 inches to penetrate any loose cuttings, then driven an additional foot with blows of a 140-pound hammer falling 30 inches. The number of hammer blows required to drive the sampler the final foot was recorded as the "penetration resistance". The penetration resistance, when properly evaluated, is an index to the soil strength and foundation supporting capability.

Representative portions of the soil samples, obtained from the sampler, were placed in glass jars and transported to our laboratory. In the laboratory, the samples were examined by an engineer to verify the driller's field classifications. Test boring records are attached, graphically showing the soil descriptions and penetration resistances.

**SECTION 011000**

**SUMMARY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Owner-furnished/Contractor-installed (OFCl) products.
5. Contractor's use of site and premises.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and Drawing conventions.

- B. Related Requirements:

1. Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.
2. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.
3. Section 017300 "Execution" for coordination of Owner-installed products.

**1.3 DEFINITIONS**

- A. Work Package: A group of specifications, drawings, and schedules prepared by the design team to describe a portion of the Project Work for pricing, permitting, and construction.

**1.4 PROJECT INFORMATION**

- A. Project Identification:

1. Project Location: Columbia County Justice Center Building, 640 Ronald Reagan Drive, Evans, Georgia 30809.

- B. Owner: Columbia County, Georgia.

1. Owner's Representative: Steven D. Prather, Office (706) 312-7374.

- C. Architect: Booker + Vick Architects, Inc., 670 Broad Street, Augusta, Georgia 30901.

1. Architect's Representative: Chris Booker, (706) 798-6792.

- D. Architect's Consultants: Architect has retained the following design professionals, who have prepared designated portions of the Contract Documents:

1. Civil Engineering: Bluewater Engineering Services, P.O. Box 617, Evans, Georgia 30809

- a. Civil Engineering Representative: Bill Corder, P.E., (706) 364-5220.

2. Structural Engineering: Slater Engineering, P.O. Box 1010, Augusta, Georgia 30903

- a. Structural Engineering Representative: Brian Slater P.E., (706) 364-9547.



3. Mechanical Engineering: PFA Engineering, 1201 Broad Street, Suite 3A, Augusta, Georgia 30901
  - a. Mechanical Engineering Representative: Joe Powell P.E./Brian Messer, P.E.,(706) 722-3959.
4. Electrical Engineering: Electrical Design Consultants, Inc. (EDC), 1201 Broad Street, Suite 1-A, Augusta, Georgia 30901.
  - a. Electrical Engineering Representative: Tom Brinson P.E./ Kyle Holt, (706) 724-3551.
5. Interior Design: Corporate Studio. 670 Broad Street, Suite 300, Augusta, Georgia 30901.
  - a. Interior Design Representative: Lisa Burgess, R.I.D., (706) 724-4800.

#### **1.5 WORK COVERED BY CONTRACT DOCUMENTS**

- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
  1. Renovation and addition for the Columbia County Justice Center, Sprinklered three stories, Additions will be 25,000 square feet and Renovations will be 14,000 square foot of the existing 70,000 square foot facility and other Work indicated in the Contract Documents.
- B. Type of Contract:
  1. Project will be constructed under a single prime contract.

#### **1.6 PHASED CONSTRUCTION**

- A. Construct the Work in phases, with each phase substantially complete as indicated on Drawings:

Refer to Sheets PH1.0, PH2.0, PH2.1, PH 3.0, PH4.0, PH5.0, PH6.0 for phasing limits and requirements.

  1. Phase 1 (Sheet PH1.0): First Floor Phasing Plan – Description of limits and requirements for Phase.
    - a. Commencement of Construction:
      - 1) Notice to Proceed: Work of this phase shall commence immediately after the Notice to Proceed is executed between Columbia County, and awarded General Contractor.
      - 2) Start Date: Work of this phase shall commence immediately after Notice to Proceed.
    - b. The Work in this Phase shall be substantially complete before start of the next Phase.
  2. Phase 2 :
    - Sheet PH2.0 - Basement and First Floor Phasing Plans - Description of limits and requirements for Phase.
    - Sheet PH2.1 - Second Floor and Roof Phasing Plans - Description of limits and requirements for Phase.
    - a. Before the start of this Phase, Owner's personnel will have ten (10) business days to move into new or temporary spaces.

- b. The Work in this Phase shall be substantially complete before start of the next Phase.
  3. Phase 3 (Sheet PH3.0): Basement, First Floor, and Second Floor Phasing Plans - Description of limits and requirements for Phase.
    - a. Before the start of this Phase, Owner's personnel will have ten (10) business days to move into new or temporary spaces.
    - b. The Work in this Phase shall be substantially complete before start of the next Phase.
  4. Phase 4 (Sheet PH4.0): First Floor and Second Floor Phasing Plans - Description of limits and requirements for Phase.
    - a. The Work in this Phase shall be substantially complete before start of the next Phase.
  5. Phase 5 (Sheet PH5.0): First Floor and Second Floor Phasing Plans - Description of limits and requirements for Phase.
    - a. The Work in this Phase shall be substantially complete before start of the next Phase.
  6. Phase 6 (Sheet PH6.0): Second Floor Phasing Plans - Description of limits and requirements for Phase.
    - a. The remaining Work in this Phase shall be substantially complete at time of Substantial Completion of the Work.
- B. Before commencing Work of each phase, submit an updated copy of Contractor's construction schedule, showing the sequence, commencement and completion dates and move out and move in dates of Owner's personnel for all phases of the Work.
- 1.7 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS**
- A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:
1. Provide to Contractor Owner-reviewed Product Data, Shop Drawings, and Samples.
  2. Provide for delivery of Owner-furnished products to Project site.
  3. Upon delivery, inspect, with Contractor present, delivered items.

If Owner-furnished products are damaged, defective, or missing, arrange for replacement.
  4. Obtain manufacturer's inspections, service, and warranties.
  5. Inform Contractor of earliest available delivery date for Owner-furnished products.
- B. Contractor's Responsibilities: The Work includes the following, as applicable:
1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
  2. Review Owner-reviewed Product Data, Shop Drawings, and Samples, noting discrepancies and other issues in providing for Owner-furnished products in the Work.
  3. Receive, unload, handle, store, protect, and install Owner-furnished products.

4. Make building services connections for Owner-furnished products.
5. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
6. Repair or replace Owner-furnished products damaged following receipt.

C. Owner-Furnished/Contractor-Installed (OFCI) Products:

1. Owner is to furnish and the Contractor is to install the following toilet accessories: Toilet tissue dispensers, soap dispensers, and paper towel dispensers. The remaining toilet accessories are to be furnished and installed by the Contractor. Contractor to provide blocking for all toilet accessories. Refer to drawings for locations and heights, and Section 102800 "Toilet, Bath and Laundry Accessories".

**1.8 CONTRACTOR'S USE OF SITE AND PREMISES**

- A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- B. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  1. Driveways, Walkways and Entrances: Keep driveways parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

**1.9 COORDINATION WITH OCCUPANTS**

- A. Full Owner Occupancy: Owner will occupy Project site and existing adjacent building(s) during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
  1. 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 approval of authorities having jurisdiction.
  2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

**1.10 WORK RESTRICTIONS**

- A. Comply with restrictions on construction operations.
  1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: Limit work to between 7:00 a.m. to 7:00 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

- C. Coordinate with requirements for temporary utilities specified in Section 015000 "Temporary Facilities and Controls."
- D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated: Notify Owner not less than two days in advance of proposed utility interruptions.
  - 1. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
- E. Notify Owner not less than two (2) days in advance of proposed disruptive operations.
- F. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances within the existing building and on Project site is not permitted.
- G. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- H. Employee Screening: Comply with Owner's requirements for background screening of Contractor personnel working on Project site.
  - 1. Maintain list of approved screened personnel with Owner's representative.

#### **1.11 SPECIFICATION AND DRAWING CONVENTIONS**

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
  - 3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
  - 4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.
  - 3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PROPOSED RENOVATION & ADDITION  
COLUMBIA COUNTY JUSTICE CENTER  
EVANS, GEORGIA

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 011000**

**SECTION 012100**

**ALLOWANCES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements governing allowances.
  - 1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following:
  - 1. Unforeseen Conditions allowances.
  - 2. General allowances.
- C. Related Sections:
  - 1. Divisions 02 through 49 Sections for items of Work covered by allowances.

**1.3 SELECTION AND PURCHASE**

- A. Within 30 days of date established for the Notice to Proceed, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
- B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
- C. Purchase products and systems selected by Architect from the designated supplier.

**1.4 SUBMITTALS**

- A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.
- B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

PROPOSED RENOVATION & ADDITION  
COLUMBIA COUNTY JUSTICE CENTER  
EVANS, GEORGIA

- D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

**1.5 COORDINATION**

- A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

**1.6 UNFORSEEN CONDITIONS & GENERAL ALLOWANCES**

- A. Use the general allowance and unforeseen conditions allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.
- B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the general allowance and unforeseen conditions allowance are included in the Contract Base Bid amount.
- C. At Project closeout, Contractor shall credit unused amounts remaining in the allowances to the Owner by Change Order.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

- A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

**3.2 PREPARATION**

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

**3.3 SCHEDULE OF ALLOWANCES**

- A. Allowance No. 1: General Allowance: Include a contingency allowance of \$ 1,000,000.00 for use according to Owner's written instructions.

**END OF SECTION 012100**

**SECTION 012500**

**SUBSTITUTION PROCEDURES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for products selected under an allowance.
  - 2. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

**1.3 DEFINITIONS**

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents.
  - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
  - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.

**1.4 ACTION SUBMITTALS**

- A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
  - 1. Substitution Request Form: Use form acceptable to Architect.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
    - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
    - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - e. Samples, where applicable or requested.
    - f. Certificates and qualification data, where applicable or requested.
    - g. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.



- h. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
  - i. Cost information, including a proposal of change, if any, in the Contract Sum.
  - j. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
  - k. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven (7) days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within fifteen (15) days of receipt of request, or seven (7) days of receipt of additional information or documentation, whichever is later.
- a. Forms of Acceptance: Change Order, or Construction Change Directive for minor changes in the Work.

#### **1.5 QUALITY ASSURANCE**

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

#### **1.6 PROCEDURES**

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

#### **1.7 SUBSTITUTIONS**

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than fifteen (15) days prior to time required for preparation and review of related submittals.
  - 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - b. Substitution request is fully documented and properly submitted.
    - c. Requested substitution will not adversely affect Contractor's construction schedule.
    - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - e. Requested substitution is compatible with other portions of the Work.
    - f. Requested substitution has been coordinated with other portions of the Work.
    - g. Requested substitution provides specified warranty.
    - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: unless otherwise indicated.

- C. Substitutions for Convenience: Architect will consider requests for substitution if received within thirty (30) days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
    - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
    - b. Requested substitution does not require extensive revisions to the Contract Documents.
    - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
    - d. Substitution request is fully documented and properly submitted.
    - e. Requested substitution will not adversely affect Contractor's construction schedule.
    - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - g. Requested substitution is compatible with other portions of the Work.
    - h. Requested substitution has been coordinated with other portions of the Work.
    - i. Requested substitution provides specified warranty.
    - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 012500**

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**SECTION 012600**

**CONTRACT MODIFICATION PROCEDURES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
  - 2. Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.
  - 3. Section 013100 "Project Management and Coordination" for requirements for forms for contract modifications provided as part of web-based Project management software.

**1.3 PROPOSAL REQUESTS**

- A. Owner-Initiated Proposal Requests; 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. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within time specified in Proposal Request after receipt of Proposal Request, 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.
    - e. Quotation Form: Use forms acceptable to the Architect.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to the Architect .
  - 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.

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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 Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Use form acceptable to the Architect..

**1.4 ADMINISTRATIVE CHANGE ORDERS**

- A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

**1.5 CHANGE ORDER PROCEDURES**

- A. On Owner's approval of a Work Change Proposal Request, the Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

**1.6 CONSTRUCTION CHANGE DIRECTIVE**

- A. Construction Change Directive: The 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 012600**

**SECTION 012650**

**CHANGE PROCEDURES**

**PART ONE – GENERAL**

**1.1 SCOPE OF WORK**

- 1.1.1 **No extra work shall be performed without first receiving written approval from the Owner thru the Architect via a Field Adjustment Form.**

**1.2 WORK INCLUDED**

- 1.2.1 Making such changes in the work, in the Contract Sum, in the Contract Time of Completion, to any combination thereof, as are described in written Change Orders signed by the Owner and the Architect and issued after execution of the Contract, in accordance with provisions of this Section.

**1.3 RELATED WORK DESCRIBED ELSEWHERE**

- 1.3.1 Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of these specifications.

**1.4 QUALITY ASSURANCE**

- 1.4.1 Include within the Contractor's quality assurance program such measures as are needed to assure familiarity of the Contractor's staff and employees with these procedures for processing Change Order data.

**1.5 PROCESSING CHANGE ORDERS INITIATED BY THE OWNER**

- 1.5.1 Should the Owner contemplate making a change in the work or a change on the Contract Time of Completion, the Architect will issue a "Request for Proposal" to the Contractor.
- (a) The Requests will describe the contemplated change, and will carry one of the following instructions to the Contractor:
- (1) Make the described change in the work at no change in the Contract Sum and no change in the Contract Time of Completion.
  - (2) Make the described change in the Work, credit of cost for which will be determined in accordance with Paragraph 7.1 of the General Conditions.
  - (3) Promptly advise the Architect as to the credit or cost proposed for the described change. This is not an authorization to proceed with the change.
- 1.5.2 If the Contractor has been directed by the Architect to make the described change in the work at no change in the Contract Sum and no change in the Contract Time of Completion, but the Contractor wishes to make a claim for one or both of such changes, the Contractor shall proceed with the change and shall notify the Architect as provided for under Paragraph 7.3 of the General Conditions.
- 1.5.3 If the Contractor has been directed by the Architect to make described changes subject to later determination of cost of credit in accordance with Paragraph 7.1. of the General Conditions, the Contractor shall:
- (a) Take such measures as needed to make the change.
  - (b) Consult with the Architect and reach agreement on the most appropriate method for determining credit or cost for the change.
  - (c) Make NO changes until written authorization from the Owner is received.

- 1.5.4 If the Contractor has been directed by the Architect to promptly advise him as to credit for cost proposed for the described change, the Contractor shall:
- (a) Analyze the described change and its impact on costs and time.
  - (b) Secure the required information and forward it to the Architect for review.
  - (c) Meet with the Architect as required explaining costs and, when appropriate, determining other acceptable ways to achieve the desired objectives.
  - (d) Alert pertinent personnel and subcontractors as to the impending change and, to the maximum extent possible, avoid such work as would increase the Owner's cost for making the change, advising the Architect in writing when avoidance no longer is practicable.
  - (e) Make NO changes until written authorization from the Owner is received

## **1.6 MARK UP PERCENTAGES ON CHANGE ORDERS**

- 1.6.1 The allowance for the combined overhead and profit, included in the total cost to the Owner, shall be based on the following schedule:
- (a) For each Contractor, the Work performed by the Contractor's own forces, 15 percent of the cost.
  - (b) For the Contractor, for Work performed by the Contractor's Subcontractor, 7.5 percent of the amount due the Subcontractor.
  - (c) For each Subcontractor involved, for Work performed by that Subcontractor's own forces, 15 percent of the cost.
  - (d) Cost to which overhead and profit is to be applied shall be determined in accordance with AIA A201, Subparagraph 7.2.2.
  - (e) Cost to which overhead and profit is to be applied shall be determined in accordance with AIA A201, Subparagraph 7.2, with the exception of markup on insurance premiums and bonds; the cost of the premium shall not be marked up. In no event shall a cost in excess of two percent of the cost of the change be allowable. If the Contractor requests payment for the premium in a change order work, the Contractor MUST provide proof of its notification to the Surety of the change in the Work and of the Surety's agreement to include such change in its coverage. Any such change must be in accordance with AIA A201, Article 11, Section 11.1.2.1.
  - (f) In order to facilitate checking of quotations for extras or credits, all proposals, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change be approved without such itemization.

## **1.7 PROCESSING CHANGES INITIATED BY THE CONTRACTOR**

- 1.7.1 Should the Contractor discover a discrepancy amount in the Contract Documents, a concealed condition as described in Paragraph 12.2 of the General Conditions, or other cause for suggesting a change in the Contract Time of Completion, he shall notify the Architect as required by pertinent provisions of the Contract Documents.
- 1.7.2 Upon agreement by the Architect that there is reasonable cause to consider the Contractor's proposed change, the Architect will issue a Request in accordance with the provisions described in Article 1.5 above.

## **1.8 REQUEST FOR PROPOSALS**

- 1.8.1 Make written reply to the Architect in response to each request.
- (a) State proposed change in the Contract Sum, if any.
  - (b) State proposed change in the Contract Time of Completion, if any.

- (c) Clearly describe other changes in the Work required by the proposed change, of desirable therewith, if any.
- (d) Include full backup data such as subcontractor's letter of proposal or similar information.
- (e) Submit this response in a single copy.
- (f) Change order mark-ups shall be limited – see Paragraph 1.6 of this Section.
- (g) When cost of credit for the change has been agreed upon by the Owner and the Contractor, or the Owner has directed that cost or credit be determined in accordance with provisions of paragraph 7.1 of the General Conditions, the Architect will issue a "Change Order" to the Contractor.

## **1.9 PROCESSING CHANGE ORDERS**

- 1.9.1 Change orders will be dated and will be numbered in sequence and must be accompanied by the supporting signed Field Adjustments by the Owner.
- 1.9.2 The change order will describe the change or changes will refer to the Request or Requests involved, accompanied by the signed Field Adjustments, and will be signed by the Owner and the Architect.
- 1.9.3 The Architect will issue four (4) copies of each Change Order to the Contractor.
  - (a) The Contractor promptly shall sign all four copies and return three copies to the Architect.
  - (b) The Architect will sign all three copies and then forward three copies to the Owner for his signature.
  - (c) The Owner will sign all three copies, retain one copy for his file and return the remaining two copies to the Architect who will then forward a fully executed copy to the Contractor.
- 1.9.4 Should the Contractor disagree with the stipulated change in Contract Sum or change in Contract Time of Completion, or both:
  - (a) The Contractor promptly shall return three copies of the Change Order, unsigned by him, to the Architect with a letter signed by him explaining his disagreement.
  - (b) The Contractor's disagreement with the Change Order shall not in any way relieve the Contractor of his responsibility to proceed with the change as ordered and to seek settlement of the dispute under pertinent provisions of the Contract Documents.

## **PART 2- PRODUCTS (Not used)**

## **PART 3- EXECUTION (Not used)**

**END OF SECTION 016750**



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**SECTION 012900**

**PAYMENT PROCEDURES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Related Requirements:
1. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
  2. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

**1.3 DEFINITIONS**

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

**1.4 SCHEDULE OF VALUES**

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule. Cost-loaded Critical Path Method Schedule may serve to satisfy requirements for the schedule of values.
1. Coordinate line items in the schedule of values with 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 ten (10) days before the date scheduled for submittal of initial Applications for Payment.
- 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. Owner's name.
    - c. Owner's Project number.
    - d. Name of Architect.
    - e. Architect's Project number.
    - f. Contractor's name and address.
    - g. 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. Round dollar amounts to whole dollars, with total equal to Contract Sum.
  - 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. Provide multiple line items for principal subcontract amounts in excess of five (5) percent of the Contract Sum.
- 5. 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.
- 6. 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.
- 7. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
- 8. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
- 9. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

#### **1.5 APPLICATIONS FOR PAYMENT**

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.
- B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Times: Submit Application for Payment to Architect by the twenty-fifth (25<sup>th</sup>) of the month. The period covered by each Application for Payment is one month, ending on the last day of the month.
  - 1. Submit draft copy of Application for Payment ten (10) days prior to due date for review by Architect.
- D. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
- E. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
  - 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
  - 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
  - 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- F. 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.
- G. Transmittal: Submit three (3) signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- H. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
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 conditional final or full waivers.
  3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
  4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
  5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- I. 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 not final).
  4. Submittal schedule (preliminary if not final).
  5. Copies of building permits.
  6. Initial progress report.
  7. Report of preconstruction conference.
  8. Certificates of insurance and insurance policies.
  9. Performance and payment bonds.
  10. Data needed to acquire Owner's insurance.

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- J. Application for Payment at Substantial Completion: After the Architect issues 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.
    - a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 017700 "Closeout Procedures."
  - 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- K. Final Payment Application: After completing Project closeout requirements, 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. Certification of completion of final punch list items.
  - 3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  - 4. Updated final statement, accounting for final changes to the Contract Sum.
  - 5. AIA Document G706.
  - 6. AIA Document G706A.
  - 7. Waivers and releases.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 012900**

**SECTION 013100**

**PROJECT MANAGEMENT AND COORDINATION**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:
  - 1. General coordination procedures.
  - 2. RFIs.
  - 3. Project meetings.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
  - 2. Section 017700 "Closeout Procedures" for coordinating closeout of the Contract.

**1.3 DEFINITIONS**

- A. RFI: Request for Information. Request from Owner, Architect, or Contractor seeking information required by or clarifications of the Contract Documents.

**1.4 INFORMATIONAL SUBMITTALS**

- 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, telephone number, and email address 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 fifteen (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, 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, and in temporary field office.. Keep list current at all times.

**1.5 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.

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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 and scheduled activities of other contractors 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.

**1.6 REQUEST FOR INFORMATION (RFI)**

- A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
  2. Coordinate and submit RFIs in a prompt manner 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. Owner name.
  3. Owner's Project number.
  4. Name of Architect.
  5. Architect's Project number.
  6. Date.
  7. Name of Contractor.
  8. RFI number, numbered sequentially.
  9. RFI subject.
  10. Specification Section number and title and related paragraphs, as appropriate.
  11. Drawing number and detail references, as appropriate.
  12. Field dimensions and conditions, as appropriate.
  13. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  14. Contractor's signature.
  15. 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.
1. Attachments shall be electronic files in PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow seven (7) 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 by Architect 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 Change Proposal according to Section 012600 "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within five (5) 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.
- F. Project name.
1. Name and address of Contractor.
  2. Name and address of Architect.
  3. RFI number, including RFIs that were returned without action or withdrawn.
  4. RFI description.
  5. Date the RFI was submitted.
  6. Date Architect's response was received.
  7. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
- G. 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 (7) days if Contractor disagrees with response.
- 1.7 DIGITAL PROJECT MANAGEMENT PROCEDURES**
- A. Architect's Data Files Not Available: Architect will not provide Architect's CAD drawing digital data files for Contractor's use during construction.
  - B. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:



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1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

**1.8 PROJECT MEETINGS**

- A. General: The General Contractor will 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 a minimum of seven ( 7) days prior to meeting.
  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 (3) days of the meeting.
- B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than fifteen (15) days after execution of the Agreement.
1. 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.
  2. Agenda: Discuss items of significance that could affect progress, including the following:
    - a. Responsibilities and personnel assignments.
    - b. Tentative construction schedule.
    - c. Phasing.
    - d. Critical work sequencing and long lead items.
    - e. Designation of key personnel and their duties.
    - f. Lines of communications.
    - g. Procedures for processing field decisions and Change Orders.
    - h. Procedures for RFIs.
    - i. Procedures for testing and inspecting.
    - j. Procedures for processing Applications for Payment.
    - k. Distribution of the Contract Documents.
    - l. Submittal procedures.
    - m. Sustainable design requirements.
    - n. Use of the premises and existing building.
    - o. Work restrictions.
    - p. Working hours.
    - q. Owner's occupancy requirements.
    - r. Responsibility for temporary facilities and controls.
    - s. Procedures for moisture and mold control.
    - t. Procedures for disruptions and shutdowns.
    - u. Construction waste management and recycling.
    - v. Parking availability.
    - w. Office, work, and storage areas.
    - x. Equipment deliveries and priorities.
    - y. First aid.
    - z. Security.
    - aa. Progress cleaning.

3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect, and Owner of scheduled meeting dates.
  2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
    - a. Contract Documents.
    - b. Options.
    - c. Related RFIs.
    - d. Related Change Orders.
    - e. Purchases.
    - f. Deliveries.
    - g. Submittals.
    - h. Sustainable design requirements.
    - i. Review of mockups.
    - j. Possible conflicts.
    - k. Time schedules.
    - l. Weather limitations.
    - m. Warranty requirements.
    - n. Compatibility of materials.
    - o. Acceptability of substrates.
    - p. Temporary facilities and controls.
    - q. Space and access limitations.
    - r. Regulations of authorities having jurisdiction.
    - s. Testing and inspecting requirements.
    - t. Installation procedures.
    - u. Coordination with other work.
    - v. Protection of adjacent work.
    - w. Protection of construction and personnel.
  3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
  4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
  5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: The General Contractor will conduct progress meetings at weekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
  2. Attendees: In addition to representatives of Owner, Architect, contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
  3. 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.

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- a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
    - 1) Review schedule for next period.
  - b. Review present and future needs of each entity present, including the following:
    - 1) Interface requirements.
    - 2) Sequence of operations.
    - 3) Status of submittals.
    - 4) Status of sustainable design documentation.
    - 5) Deliveries.
    - 6) Off-site fabrication.
    - 7) Access.
    - 8) Site use.
    - 9) Temporary facilities and controls.
    - 10) Progress cleaning.
    - 11) Quality and work standards.
    - 12) Status of correction of deficient items.
    - 13) Field observations.
    - 14) Status of RFIs.
    - 15) Status of Proposal Requests.
    - 16) Pending changes.
    - 17) Status of Change Orders.
    - 18) Pending claims and disputes.
    - 19) Documentation of information for payment requests.
4. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.
- a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 013100**

## SECTION 013300

### SUBMITTAL PROCEDURES

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Submittal schedule requirements.
  - 2. Administrative and procedural requirements for submittals.
- B. Related Requirements:
  - 1. Section 012900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
  - 2. Section 013100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
  - 3. Section 014000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
  - 4. Section 017700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
  - 5. Section 017823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
  - 6. Section 017839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

##### 1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

##### 1.4 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal Schedule: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
  - 3. Final Submittal Schedule: Submit concurrently with the first complete submittal of Contractor's construction schedule.

- a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:
  - a. Scheduled date for first submittal.
  - b. Specification Section number and title.
  - c. Submittal Category: Action; informational.
  - d. Name of subcontractor.
  - e. Description of the Work covered.
  - f. Scheduled date for Architect's final release or approval.

## 1.5 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:
  1. Project name.
  2. Date.
  3. Name of Architect.
  4. Name of Contractor.
  5. Name of firm or entity that prepared submittal.
  6. Names of subcontractor, manufacturer, and supplier.
  7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
  8. Category and type of submittal.
  9. Submittal purpose and description.
  10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
  11. Drawing number and detail references, as appropriate.
  12. Indication of full or partial submittal.
  13. Location(s) where product is to be installed, as appropriate.
  14. Other necessary identification.
  15. Remarks.
  16. Signature of transmitter.
- B. Options: Identify options requiring selection by Architect.
- C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.
- D. Paper Submittals:
  1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
  2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
  3. Action Submittals: Submit three (3) paper copies of each submittal unless otherwise indicated. Architect will return two (2) copies.
  4. Informational Submittals: Submit one (1) paper copies of each submittal unless otherwise indicated. Architect will not return copies.
  5. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
  6. Transmittal for Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using AIA Document G810 transmittal form.

- E. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.
- F. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

## 1.6 SUBMITTAL PROCEDURES

- A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  - 1. Email: Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by Architect.
    - a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.
  - 2. Paper: Prepare submittals in paper form and deliver to Architect.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  - 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  - 4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
    - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. 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 fifteen (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 fifteen (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 twenty-one (21) days for initial review of each submittal.
- D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
  - 1. Note date and content of previous submittal.
  - 2. Note date and content of revision in label or title block, and clearly indicate extent of revision.
  - 3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

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- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

**1.7 SUBMITTAL REQUIREMENTS**

- A. 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 unsuitable 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 that show 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 Shop Drawings, and before or concurrently with Samples.
- B. 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. Paper 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.
    - a. Two opaque (bond) copies of each submittal. Architect will return one (1) copy.
    - b. Three opaque copies of each submittal. Architect will retain two (2) copies; remainder will be returned.

- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
  2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
    - a. Project name and submittal number.
    - b. Generic description of Sample.
    - c. Product name and name of manufacturer.
    - d. Sample source.
    - e. Number and title of applicable Specification Section.
    - f. Specification paragraph number and generic name of each item.
  3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics and identification information for record.
  4. Paper Transmittal: Include paper transmittal, including complete submittal information indicated.
  5. 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.
  6. 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 (1) 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.
  7. 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 (3) sets of Samples. Architect will retain two (2) 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 (3) sets of paired units that show approximate limits of variations.



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- D. 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.
- E. 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.
- F. Certificates:
1. Certificates and Certifications Submittals: Submit 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. Provide a notarized signature where indicated.
  2. 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.
  3. 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.
  4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
  5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
  6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.

**1.8 CONTRACTOR'S REVIEW**

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

**1.9 ARCHITECT'S REVIEW**

- A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return.
1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action, as follows:
  2. Paper Submittals: Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

- B. Informational Submittals: Architect] will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Architect will return without review submittals received from sources other than Contractor.
- F. Submittals not required by the Contract Documents will be returned by Architect without action.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 013300**

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**SECTION 013516**

**ALTERATION PROJECT PROCEDURES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes special procedures for alteration work.

**1.3 DEFINITIONS**

- A. Alteration Work: This term includes remodeling, renovation, repair, and maintenance work performed within existing spaces or on existing surfaces as part of the Project.
- B. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.
- C. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by the Architect.
- D. Refinish: To remove existing finishes to base material and apply new finish to match original, or as otherwise indicated.
- E. Repair: To correct damage and defects, retaining existing materials, features, and finishes. This includes patching, piecing-in, splicing, consolidating, or otherwise reinforcing or upgrading materials.
- F. Replace: To remove, duplicate, and reinstall entire item with new material. The original item is the pattern for creating duplicates unless otherwise indicated.
- G. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.
- H. Retain: To keep existing items that are not to be removed or dismantled.
- I. Strip: To remove existing finish down to base material unless otherwise indicated.

**1.4 COORDINATION**

- A. Alteration Work Subschedule: A construction schedule coordinating the sequencing and scheduling of alteration work for entire Project, including each activity to be performed, and based on Contractor's Construction Schedule. Secure time commitments for performing critical construction activities from separate entities responsible for alteration work.
  - 1. Schedule construction operations in sequence required to obtain best Work results.
  - 2. Coordinate sequence of alteration work activities to accommodate the following:
    - 3. Owner's continuing occupancy of portions of existing building
      - a. Other known work in progress.

- b. Tests and inspections.
  - 4. Detail sequence of alteration work, with start and end dates.
  - 5. Utility Services: Indicate how long utility services will be interrupted. Coordinate shutoff, capping, and continuation of utility services.
  - 6. Use of elevator and stairs.
- B. Equipment Data: List gross loaded weight, axle-load distribution, and wheel-base dimension data for mobile and heavy equipment proposed for use in existing structure. Do not use such equipment without certification from Contractor's professional engineer that the structure can support the imposed loadings without damage.
- C. Pedestrian and Vehicular Circulation: Coordinate alteration work with circulation patterns within Project building(s) and site. Some work is near circulation patterns and adjacent to restricted areas. Circulation patterns cannot be closed off entirely and in places can be only temporarily redirected around small areas of work. Access to restricted areas may not be obstructed. Plan and execute the Work accordingly.

### **1.5 PROJECT MEETINGS FOR ALTERATION WORK**

- A. Preliminary Conference for Alteration Work: Before starting alteration work, the Contractor will conduct conference at Project site.
  - 1. Attendees: In addition to representatives of Owner, Architect, and Contractor, shall be represented at the meeting.
  - 2. Agenda: Discuss items of significance that could affect progress of alteration work, including review of the following:
    - a. Alteration Work Subschedule: Discuss and finalize; verify availability of materials, specialists' personnel, equipment, and facilities needed to make progress and avoid delays.
    - b. Areas where existing construction is to remain and the required protection.
    - c. Hauling routes.
    - d. Sequence of alteration work operations.
    - e. Storage, protection, and accounting for salvaged and specially fabricated items.
    - f. Existing conditions, staging, and structural loading limitations of areas where materials are stored.
    - g. Qualifications of personnel assigned to alteration work and assigned duties.
    - h. Requirements for extent and quality of work, tolerances, and required clearances.
    - i. Embedded work such as flashings and lintels, special details, collection of waste, protection of occupants and the public, and condition of other construction that affects the Work or will affect the work.
  - 3. Reporting: The Contractor will record results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from conference.
- B. Coordination Meetings: Conduct coordination meetings specifically for alteration work at weekly intervals. Coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
  - 1. Attendees: In addition to representatives of Owner, Architect, and Contractor, each specialist, supplier, installer, and other entity concerned with progress or involved in planning, coordination, or performance of alteration work activities shall be represented at these meetings. All participants at conference shall be familiar with Project and authorized to conclude matters relating to alteration work.

2. Agenda: Review and correct or approve minutes of previous coordination meeting. Review other items of significance that could affect progress of alteration work. Include topics for discussion as appropriate to status of Project.
  - a. Alteration Work Subschedule: Review progress since last coordination meeting. Determine whether each schedule item is on time, ahead of schedule, or behind schedule. Determine how construction behind schedule will be expedited with retention of quality; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities are completed within the Contract Time.
  - b. Schedule Updating: Revise Contractor's Alteration Work Subschedule after each coordination meeting where revisions to schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
  - c. Review present and future needs of each entity present, including review items listed in the "Preliminary Conference for Alteration Work" Paragraph in this article and the following:
    - 1) Interface requirements of alteration work with other Project Work.
    - 2) Status of submittals for alteration work.
    - 3) Access to alteration work locations.
    - 4) Quality and work standards of alteration work.
    - 5) Change Orders for alteration work.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

#### **1.6 INFORMATIONAL SUBMITTALS**

- A. Preconstruction Documentation: Show preexisting conditions of adjoining construction and site improvements that are to remain, including finish surfaces, that might be misconstrued as damage caused by Contractor's alteration work operations.

#### **1.7 QUALITY ASSURANCE**

- A. Alteration Work Program: Prepare a written plan for alteration work for whole Project, including each phase or process and protection of surrounding materials during operations. Show compliance with indicated methods and procedures specified in this and other Sections. Coordinate this whole-Project alteration work program with specific requirements of programs required in other alteration work Sections.
  1. Dust and Noise Control: Include locations of proposed temporary dust- and noise-control partitions and means of egress from occupied areas coordinated with continuing on-site operations and other known work in progress.
  2. Debris Hauling: Include plans clearly marked to show debris hauling routes, turning radii, and locations and details of temporary protective barriers.
- B. Safety and Health Standard: Comply with ANSI/ASSE A10.6.

#### **1.8 STORAGE AND HANDLING OF SALVAGED MATERIALS**

- A. Salvaged Materials:
  1. Clean loose dirt and debris from salvaged items unless more extensive cleaning is indicated.
  2. Pack or crate items after cleaning; cushion against damage during handling. Label contents of containers.

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3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage designated by Owner
5. Protect items from damage during transport and storage.

B. Salvaged Materials for Reinstallation:

1. Repair and clean items for reuse as indicated.
2. Pack or crate items after cleaning and repairing; cushion against damage during handling. Label contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment unless otherwise indicated. Provide connections, supports, and miscellaneous materials to make items functional for use indicated.

C. Existing Materials to Remain: Protect construction indicated to remain against damage and soiling from construction work. Where permitted by Architect, items may be dismantled and taken to a suitable, protected storage location during construction work and reinstalled in their original locations after alteration and other construction work in the vicinity is complete.

D. Storage: Catalog and store items within a weathertight enclosure where they are protected from moisture, weather, condensation, and freezing temperatures.

1. Identify each item for reinstallation with a nonpermanent mark to document its original location. Indicate original locations on plans, elevations, sections, or photographs by annotating the identifying marks.
2. Secure stored materials to protect from theft.
3. Control humidity so that it does not exceed 85 percent. Maintain temperatures 5 deg F or more above the dew point.

E. Storage Space:

1. Owner will arrange for limited on-site location(s) for free storage of salvaged material. This storage space includes security and climate control for stored material.
2. Arrange for off-site locations for storage and protection of salvaged material that cannot be stored and protected on-site.

**1.9 FIELD CONDITIONS**

- A. Survey of Existing Conditions: Record existing conditions that affect the Work by use of preconstruction photographs.
- B. Discrepancies: Notify Architect of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.
- C. Size Limitations in Existing Spaces: Materials, products, and equipment used for performing the Work and for transporting debris, materials, and products shall be of sizes that clear surfaces within existing spaces, areas, rooms, and openings, including temporary protection, by 12 inches or more.

**PART 2 - PRODUCTS - (Not Used)**

**PART 3 - EXECUTION**

**3.1 PROTECTION**

- A. Protect persons, motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm resulting from alteration work.

1. Use only proven protection methods, appropriate to each area and surface being protected
2. Provide temporary barricades, barriers, and directional signage to exclude the public from areas where alteration work is being performed.
3. Erect temporary barriers to form and maintain fire-egress routes.
4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during alteration work.
5. Contain dust and debris generated by alteration work, and prevent it from reaching the public or adjacent surfaces.
6. Provide shoring, bracing, and supports as necessary. Do not overload structural elements.
7. Protect floors and other surfaces along hauling routes from damage, wear, and staining.
8. Provide supplemental sound-control treatment to isolate demolition work from other areas of the building.

B. Temporary Protection of Materials to Remain:

1. Protect existing materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated.
2. Do not attach temporary protection to existing surfaces except as indicated as part of the alteration work program.

C. Utility and Communications Services:

1. Notify Owner, Architect, authorities having jurisdiction, and entities owning or controlling wires, conduits, pipes, and other services affected by alteration work before commencing operations.
2. Disconnect and cap pipes and services as required by authorities having jurisdiction, as required for alteration work.
3. Maintain existing services unless otherwise indicated; keep in service, and protect against damage during operations. Provide temporary services during interruptions to existing utilities.

D. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Architect immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is functioning properly.

1. Prevent solids such as adhesive or mortar residue or other debris from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from alteration work.
2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

### 3.2 PROTECTION FROM FIRE

A. General: Follow fire-prevention plan and the following:

1. Comply with NFPA 241 requirements unless otherwise indicated.
2. Remove and keep area free of combustibles, including rubbish, paper, waste, and chemicals, unless necessary for the immediate work.
  - a. If combustible material cannot be removed, provide fire blankets to cover such materials.

B. Heat-Generating Equipment and Combustible Materials: Comply with the following procedures while performing work with heat-generating equipment or combustible materials, including



welding, torch-cutting, soldering, brazing, removing paint with heat, or other operations where open flames or implements using high heat or combustible solvents and chemicals are anticipated:

1. Obtain Owner's approval for operations involving use of welding or other high-heat equipment. Use of open-flame equipment is not permitted. Notify Owner at least 72 hours before each occurrence, indicating location of such work.
  2. As far as practicable, restrict heat-generating equipment to shop areas or outside the building.
  3. Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe.
  4. Use fireproof baffles to prevent flames, sparks, hot gases, or other high-temperature material from reaching surrounding combustible material.
  5. Prevent the spread of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings.
- C. Fire-Control Devices: Provide and maintain fire extinguishers, fire blankets, and rag buckets for disposal of rags with combustible liquids. Maintain each as suitable for the type of fire risk in each work area. Ensure that nearby personnel and the fire-watch personnel are trained in fire-extinguisher and blanket use.
- D. Sprinklers: Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to sprinklers, shield them temporarily with guards.
1. Remove temporary guards at the end of work shifts, whenever operations are paused, and when nearby work is complete.

### **3.3 PROTECTION DURING APPLICATION OF CHEMICALS**

- A. Protect motor vehicles, surrounding surfaces of building, building site, plants, and surrounding buildings from harm or spillage resulting from applications of chemicals and adhesives.
- B. Cover adjacent surfaces with protective materials that are proven to resist chemicals selected for Project unless chemicals being used will not damage adjacent surfaces as indicated in alteration work program. Use covering materials and masking agents that are waterproof and UV resistant and that will not stain or leave residue on surfaces to which they are applied. Apply protective materials according to manufacturer's written instructions. Do not apply liquid masking agents or adhesives to painted or porous surfaces. When no longer needed, promptly remove protective materials.
- C. Do not apply chemicals during winds of sufficient force to spread them to unprotected surfaces.
- D. Neutralize alkaline and acid wastes and legally dispose of off Owner's property.
- E. Collect and dispose of runoff from chemical operations by legal means and in a manner that prevents soil contamination, soil erosion, undermining of paving and foundations, damage to landscaping, or water penetration into building interior.

### **3.4 GENERAL ALTERATION WORK**

- A. Have specialty work performed only by qualified specialists.
- B. Ensure that supervisory personnel are present when work begins and during its progress.

- C. Notify Architect of visible changes in the integrity of material or components whether from environmental causes including biological attack, UV degradation, freezing, or thawing or from structural defects including cracks, movement, or distortion.
  - 1. Do not proceed with the work in question until directed by Architect.

**END OF SECTION 013516**

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**SECTION 014000**

**QUALITY REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

**1.3 DEFINITIONS**

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five (5) previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
  - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."
- E. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

- F. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

#### **1.4 CONFLICTING REQUIREMENTS**

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.
- D. Reports: Prepare and submit certified written reports and documents as specified.
- E. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

#### **1.6 CONTRACTOR'S QUALITY-CONTROL PLAN**

- A. Quality-Control Plan, General: Submit quality-control plan within fifteen (15) days of Notice to Proceed, and not less than five (5) days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.
- B. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- C. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and

- inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
- D. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.

## 1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
1. Date of issue.
  2. Project title and number.
  3. Name, address, telephone number, and email address of testing agency.
  4. Dates and locations of samples and tests or inspections.
  5. Names of individuals making tests and inspections.
  6. Description of the Work and test and inspection method.
  7. Identification of product and Specification Section.
  8. Complete test or inspection data.
  9. Test and inspection results and an interpretation of test results.
  10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
  11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  12. Name and signature of laboratory inspector.
  13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of technical representative making report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement of whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.

4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

## **1.8 QUALITY ASSURANCE**

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. **Fabricator Qualifications:** A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. **Installer Qualifications:** A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. **Testing and Inspecting Agency Qualifications:** An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- F. **Manufacturer's Technical Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- G. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

## **1.9 QUALITY CONTROL**

- A. **Owner Responsibilities:** Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection 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. **Contractor Responsibilities:** Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
  1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  2. Engage a qualified testing agency to perform quality-control services.

- a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
  4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."
- D. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- E. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- F. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.
- G. 1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

#### **1.10 SPECIAL TESTS AND INSPECTIONS**

- A. Special Tests and Inspections: Owner will engage a qualified special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, and as follows:
1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
  2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
  3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
  4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.



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5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION**

**3.1 TEST AND INSPECTION LOG**

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
  1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.
  1. Submit log at Project closeout as part of Project Record Documents.

**3.2 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
  1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."
- 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 014000**

**SECTION 014200**

**REFERENCES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 DEFINITIONS**

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

**1.3 INDUSTRY STANDARDS**

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
  - 1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.

- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

#### 1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Abbreviations and acronyms not included in this list shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States." The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; [www.aabc.com](http://www.aabc.com).
2. AAMA - American Architectural Manufacturers Association; [www.aamanet.org](http://www.aamanet.org).
3. ACI - American Concrete Institute; (Formerly: ACI International); [www.concrete.org](http://www.concrete.org).
4. ACPA - American Concrete Pipe Association; [www.concrete-pipe.org](http://www.concrete-pipe.org).
5. AEIC - Association of Edison Illuminating Companies, Inc. (The); [www.aeic.org](http://www.aeic.org).
6. AF&PA - American Forest & Paper Association; [www.afandpa.org](http://www.afandpa.org).
7. AGA - American Gas Association; [www.aga.org](http://www.aga.org).
8. AHAM - Association of Home Appliance Manufacturers; [www.aham.org](http://www.aham.org).
9. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); [www.ahrinet.org](http://www.ahrinet.org).
10. AI - Asphalt Institute; [www.asphaltinstitute.org](http://www.asphaltinstitute.org).
11. AIA - American Institute of Architects (The); [www.aia.org](http://www.aia.org).
12. AISC - American Institute of Steel Construction; [www.aisc.org](http://www.aisc.org).
13. AISI - American Iron and Steel Institute; [www.steel.org](http://www.steel.org).
14. AMCA - Air Movement and Control Association International, Inc.; [www.amca.org](http://www.amca.org).
15. ANSI - American National Standards Institute; [www.ansi.org](http://www.ansi.org).
16. APA - Architectural Precast Association; [www.archprecast.org](http://www.archprecast.org).
17. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
18. ARI - American Refrigeration Institute; (See AHRI).
19. ASCE - American Society of Civil Engineers; [www.asce.org](http://www.asce.org).
20. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
21. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; [www.ashrae.org](http://www.ashrae.org).
22. ASME - ASME International; (American Society of Mechanical Engineers); [www.asme.org](http://www.asme.org).
23. ASSE - American Society of Sanitary Engineering; [www.asse-plumbing.org](http://www.asse-plumbing.org).
24. ASSP - American Society of Safety Professionals (The); [www.assp.org](http://www.assp.org).
25. ASTM - ASTM International; [www.astm.org](http://www.astm.org).
26. ATIS - Alliance for Telecommunications Industry Solutions; [www.atis.org](http://www.atis.org).
27. AVIXA - Audiovisual and Integrated Experience Association; (Formerly: Infocomm International); [www.soundandcommunications.com](http://www.soundandcommunications.com).
28. AWI - Architectural Woodwork Institute; [www.awinet.org](http://www.awinet.org).
29. AWMAC - Architectural Woodwork Manufacturers Association of Canada; [www.awmac.com](http://www.awmac.com).
30. AWS - American Welding Society; [www.aws.org](http://www.aws.org).
31. AWWA - American Water Works Association; [www.awwa.org](http://www.awwa.org).
32. BHMA - Builders Hardware Manufacturers Association; [www.buildershardware.com](http://www.buildershardware.com).
33. BIA - Brick Industry Association (The); [www.gobrick.com](http://www.gobrick.com).
34. BICSI - BICSI, Inc.; [www.bicsi.org](http://www.bicsi.org).

35. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); [www.bifma.org](http://www.bifma.org).
36. CFSEI - Cold-Formed Steel Engineers Institute; [www.cfsei.org](http://www.cfsei.org).
37. CGA - Compressed Gas Association; [www.cganet.com](http://www.cganet.com).
38. CIMA - Cellulose Insulation Manufacturers Association; [www.cellulose.org](http://www.cellulose.org).
39. CISCA - Ceilings & Interior Systems Construction Association; [www.cisca.org](http://www.cisca.org).
40. CISPI - Cast Iron Soil Pipe Institute; [www.cispi.org](http://www.cispi.org).
41. CLFMI - Chain Link Fence Manufacturers Institute; [www.chainlinkinfo.org](http://www.chainlinkinfo.org).
42. CPA - Composite Panel Association; [www.compositepanel.org](http://www.compositepanel.org).
43. CRI - Carpet and Rug Institute (The); [www.carpet-rug.org](http://www.carpet-rug.org).
44. CRSI - Concrete Reinforcing Steel Institute; [www.crsi.org](http://www.crsi.org).
45. CSA - CSA Group; [www.csa-group.org](http://www.csa-group.org).
46. CSI - Construction Specifications Institute (The); [www.csiresources.org](http://www.csiresources.org).
47. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); [www.coolingtechnology.org](http://www.coolingtechnology.org).
48. CWC - Composite Wood Council; (See CPA).
49. DASMA - Door and Access Systems Manufacturers Association; [www.dasma.com](http://www.dasma.com).
50. DHI - Door and Hardware Institute; [www.dhi.org](http://www.dhi.org).
51. ECA - Electronic Components Association; (See ECIA).
52. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
53. ECIA - Electronic Components Industry Association; [www.eciaonline.org](http://www.eciaonline.org).
54. EIA - Electronic Industries Alliance; (See TIA).
55. EIMA - EIFS Industry Members Association; [www.eima.com](http://www.eima.com).
56. EJMA - Expansion Joint Manufacturers Association, Inc.; [www.ejma.org](http://www.ejma.org).
57. EOS/ESD Association; (Electrostatic Discharge Association); [www.esda.org](http://www.esda.org).
58. FCI - Fluid Controls Institute; [www.fluidcontrolsinstitute.org](http://www.fluidcontrolsinstitute.org).
59. FM Approvals - FM Approvals LLC; [www.fmglobal.com](http://www.fmglobal.com).
60. FM Global - FM Global; (Formerly: FMG - FM Global); [www.fmglobal.com](http://www.fmglobal.com).
61. FSA - Fluid Sealing Association; [www.fluidsealing.com](http://www.fluidsealing.com).
62. GA - Gypsum Association; [www.gypsum.org](http://www.gypsum.org).
63. GANA - Glass Association of North America; (See NGA).
64. GS - Green Seal; [www.greenseal.org](http://www.greenseal.org).
65. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
66. ICBO - International Conference of Building Officials; (See ICC).
67. ICC - International Code Council; [www.iccsafe.org](http://www.iccsafe.org).
68. ICEA - Insulated Cable Engineers Association, Inc.; [www.icea.net](http://www.icea.net).
69. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); [www.ieee.org](http://www.ieee.org).
70. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); [www.ies.org](http://www.ies.org).
71. IESNA - Illuminating Engineering Society of North America; (See IES).
72. IGMA - Insulating Glass Manufacturers Alliance; [www.igmaonline.org](http://www.igmaonline.org).
73. ISSFA - International Solid Surface Fabricators Association; (See ISFA). KCMA - Kitchen Cabinet Manufacturers Association; [www.kcma.org](http://www.kcma.org).
74. LMA - Laminating Materials Association; (See CPA).
75. LPI - Lightning Protection Institute; [www.lightning.org](http://www.lightning.org).
76. MCA - Metal Construction Association; [www.metalconstruction.org](http://www.metalconstruction.org).
77. MFMA - Metal Framing Manufacturers Association, Inc.; [www.metalframingmfg.org](http://www.metalframingmfg.org). MHIA - Material Handling Industry of America; [www.mhia.org](http://www.mhia.org).
78. MMPA - Moulding & Millwork Producers Association; [www.wmmpa.com](http://www.wmmpa.com).
79. MPI - Master Painters Institute; [www.paintinfo.com](http://www.paintinfo.com).
80. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; [www.mss-hq.org](http://www.mss-hq.org).
81. NAAMM - National Association of Architectural Metal Manufacturers; [www.naamm.org](http://www.naamm.org).
82. NADCA - National Air Duct Cleaners Association; [www.nadca.com](http://www.nadca.com).
83. NAIMA - North American Insulation Manufacturers Association; [www.naima.org](http://www.naima.org).

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84. NALP - National Association of Landscape Professionals; [www.landscapeprofessionals.org](http://www.landscapeprofessionals.org).
  85. NCMA - National Concrete Masonry Association; [www.ncma.org](http://www.ncma.org).
  86. NEBB - National Environmental Balancing Bureau; [www.nebb.org](http://www.nebb.org).
  87. NECA - National Electrical Contractors Association; [www.necanet.org](http://www.necanet.org).
  88. NEMA - National Electrical Manufacturers Association; [www.nema.org](http://www.nema.org).
  89. NETA - InterNational Electrical Testing Association; [www.netaworld.org](http://www.netaworld.org).
  90. NFPA - National Fire Protection Association; [www.nfpa.org](http://www.nfpa.org).
  91. NFPA - NFPA International; (See NFPA).
  92. NFRC - National Fenestration Rating Council; [www.nfrc.org](http://www.nfrc.org).
  93. NGA - National Glass Association (The); (Formerly: Glass Association of North America); [www.glass.org](http://www.glass.org).
  94. NOMMA - National Ornamental & Miscellaneous Metals Association; [www.nomma.org](http://www.nomma.org).
  95. NRCA - National Roofing Contractors Association; [www.nrca.net](http://www.nrca.net).
  96. NRMCA - National Ready Mixed Concrete Association; [www.nrmca.org](http://www.nrmca.org).
  97. NSF - NSF International; [www.nsf.org](http://www.nsf.org).
  98. NSPE - National Society of Professional Engineers; [www.nspe.org](http://www.nspe.org).
  99. NSSGA - National Stone, Sand & Gravel Association; [www.nssga.org](http://www.nssga.org).
  100. PCI - Precast/Prestressed Concrete Institute; [www.pci.org](http://www.pci.org).
  101. PDI - Plumbing & Drainage Institute; [www.pdionline.org](http://www.pdionline.org).
  102. RCSC - Research Council on Structural Connections; [www.boltcouncil.org](http://www.boltcouncil.org).
  103. RFCI - Resilient Floor Covering Institute; [www.rfci.com](http://www.rfci.com).
  104. SAE - SAE International; [www.sae.org](http://www.sae.org).
  105. SCTE - Society of Cable Telecommunications Engineers; [www.scte.org](http://www.scte.org).
  106. SDI - Steel Deck Institute; [www.sdi.org](http://www.sdi.org).
  107. SDI - Steel Door Institute; [www.steeldoor.org](http://www.steeldoor.org).
  108. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
  109. SIA - Security Industry Association; [www.siaonline.org](http://www.siaonline.org).
  110. SJI - Steel Joist Institute; [www.steeljoist.org](http://www.steeljoist.org). SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; [www.smacna.org](http://www.smacna.org).
  111. SPRI - Single Ply Roofing Industry; [www.spri.org](http://www.spri.org).
  112. SSINA - Specialty Steel Industry of North America; [www.ssina.com](http://www.ssina.com).
  113. TCNA - Tile Council of North America, Inc.; [www.tileusa.com](http://www.tileusa.com).
  114. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); [www.tiaonline.org](http://www.tiaonline.org).
  115. TMS - The Masonry Society; [www.masonrysociety.org](http://www.masonrysociety.org).
  116. TPI - Turfgrass Producers International; [www.turfgrassod.org](http://www.turfgrassod.org).
  117. UL - Underwriters Laboratories Inc.; [www.ul.com](http://www.ul.com).
  
  118. WA - Wallcoverings Association; [www.wallcoverings.org](http://www.wallcoverings.org).
  119. WASTEC - Waste Equipment Technology Association; [www.wastec.org](http://www.wastec.org).
  120. WCMA - Window Covering Manufacturers Association; [www.wcmanet.org](http://www.wcmanet.org). WDMA - Window & Door Manufacturers Association; [www.wdma.com](http://www.wdma.com).
  121. WI - Woodwork Institute; [www.wicnet.org](http://www.wicnet.org).
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
1. IAPMO - International Association of Plumbing and Mechanical Officials; [www.iapmo.org](http://www.iapmo.org).
  2. ICC - International Code Council; [www.iccsafe.org](http://www.iccsafe.org).
  3. ICC-ES - ICC Evaluation Service, LLC; [www.icc-es.org](http://www.icc-es.org).

- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. OSHA - Occupational Safety & Health Administration; [www.osha.gov](http://www.osha.gov).

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 014200**

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**SECTION 015000**

**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:

- 1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

**1.3 USE CHARGES**

- A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to Architect, occupants of Project, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services and metering as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services and metering as required for construction operations.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Implementation and Termination Schedule: Within fifteen (15) days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- D. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
- E. Moisture and Mold Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
  - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
  - 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, 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.



3. Indicate methods to be used to avoid trapping water in finished work.
- F. 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. 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.
- G. Noise and Vibration Control Plan: Identify and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by the Owner. Include the following:
1. Methods used to meet the goals and requirements of the Owner.
  2. Concrete cutting method(s) to be used.
  3. Location of construction devices on the site.
  4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
  5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with the Owner.
  6. Indicate locations of sensitive courtroom/hearing areas or other areas requiring special attention as identified by Owner. Indicate means for complying with Owner's requirements.

## **1.5 QUALITY ASSURANCE**

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide galvanized-steel bases for supporting posts.
- B. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less in accordance with ASTM E84 and passing NFPA 701 Test Method 2.
- C. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats, minimum 36 by 60 inches.

### **2.2 TEMPORARY FACILITIES**

- A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Field Offices: General Contractor will provide conditioned interior space for field offices for duration of Project. The General Contractor shall provide one (1) field office to include the following:
- C. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, General Contractor, Architect and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:

1. Furniture required for Project-site documents, including file cabinets, plan tables, plan racks, and bookcases.
  2. Conference room of sufficient size to accommodate meetings of fifteen (15) individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
  3. Drinking water and private toilet.
  4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
  5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
1. Store combustible materials apart from building.

### **2.3 EQUIPMENT**

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
- C.
  1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
- D. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.

## **PART 3 - EXECUTION**

### **3.1 TEMPORARY FACILITIES, GENERAL**

- A. Conservation: Coordinate construction and use of temporary facilities 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.

### **3.2 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.
  1. Locate facilities to limit site disturbance as specified in Section 011000 "Summary."
- 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 completed permanent facilities.
- C. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
  1. Prior to commencing work, isolate the HVAC system in areas where work is to be performed.
    - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
    - b. Maintain negative air pressure within work area, using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.

### **3.3 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. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
  1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
- E. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash 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.
  1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted.
- F. Temporary Heating and Cooling: Provide temporary heating and cooling 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.
  1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.
- 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.
  1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

### **3.4 SUPPORT FACILITIES INSTALLATION**

- A. Comply with the following:
  1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
  2. Utilize designated area within existing building for temporary field offices.
  3. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial

Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

- B. Temporary Use of Planned 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.
  - 1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
  - 2. Prepare subgrade and install subbase and base for temporary roads and paved areas in accordance with Columbia County Engineering Division Construction Standard Specifications and Details, dated December 2023
- C. Traffic Controls: Comply with requirements of authorities having jurisdiction.
  - 1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
  - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- D. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- E. Storage and Staging: Use designated areas of Project site for storage and staging needs.
- F. 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 a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
- G. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
  - 1. Identification Signs: Provide Project identification signs as indicated on Drawings.
  - 2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
    - a. Provide temporary, directional signs for construction personnel and visitors.
  - 3. Maintain and touch up signs, so they are legible at all times.
- H. Waste Disposal Facilities: Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."
- I. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
- J. 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.
- K. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
  - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas, so no evidence remains of correction work.

- L. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

### 3.5 SECURITY AND PROTECTION 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.
  - 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.
- 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.
  - 1. Comply with work restrictions specified in Section 011000 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings
  - 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
  - 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
  - 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
  - 4. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.
- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. 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.
  - 1. Site Enclosure Fence: Before construction operations begin furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
  - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- F. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- G. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.
- H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- I. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
1. Construct dustproof partitions with gypsum wallboard, with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
  2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
  3. Insulate partitions to control noise transmission to occupied areas.
  4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
  5. Protect air-handling equipment, light fixtures, sprinklers, diffusers, etc..
  6. Provide walk-off mats at each entrance through temporary partition.
- J. 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.
1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
  2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
  3. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign, stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

### **3.6 MOISTURE AND MOLD CONTROL**

- A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.
- B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
1. Protect porous materials from water damage.
  2. Protect stored and installed material from flowing or standing water.
  3. Keep porous and organic materials from coming into prolonged contact with concrete.
  4. Remove standing water from decks.
  5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
  2. Keep interior spaces reasonably clean and protected from water damage.
  3. Periodically collect and remove waste containing cellulose or other organic matter.
  4. Discard or replace water-damaged material.
  5. Do not install material that is wet.
  6. Discard and replace stored or installed material that begins to grow mold.
  7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.
- D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
1. Control moisture and humidity inside building by maintaining effective dry-in conditions.

2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
  - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48hours are considered defective and require replacing.
  - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
  - c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48hours.

### **3.7 OPERATION, TERMINATION, AND REMOVAL**

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
  1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
  2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
  3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

**END OF SECTION 015000**

**SECTION 016000**

**PRODUCT REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
1. Section 011000 "Summary" for Contractor requirements related to Owner-furnished products.
  2. Section 012100 "Allowances" for products selected under an allowance.
  3. Section 012500 "Substitution Procedures" for requests for substitutions.
  4. Section 014200 "References" for applicable industry standards for products specified.
  5. Section 017700 "Closeout Procedures" for submitting warranties.

**1.3 DEFINITIONS**

- A. Products: Items obtained for incorporating into the Work, whether purchased 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. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
  3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.
1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.



- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
- D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
  - 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
  - 2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.
- E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."
- F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

#### **1.4 QUALITY ASSURANCE**

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
  - 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
  - 2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
    - a. Name of product and manufacturer.
    - b. Model and serial number.
    - c. Capacity.
    - d. Speed.
    - e. Ratings.
  - 3. See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification requirements.

#### **1.5 COORDINATION**

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

#### **1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.
- B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

## 1.7 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 standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
  2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to 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 included in the Project Manual, prepare a written document, using indicated form properly executed.
  3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

## PART 2 - PRODUCTS

### 2.1 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.

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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. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
  - a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:

1. Sole 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.
  - a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."
2. Sole 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.
  - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
  - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
  - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
  - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.

5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.
  - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."
6. 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 by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
  - a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.
- C. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a 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.

## **2.2 COMPARABLE PRODUCTS**

- A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:
  1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
  3. Evidence that proposed product provides specified warranty.
  4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
  5. Samples, if requested.
- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."
  1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
  2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.
- C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.
- D. Submittal Requirements, Single-Step Process: When acceptable to Architect, incorporate specified submittal requirements of individual Specification Section in combined submittal for comparable products. Approval by the Architect of Contractor's request for use of comparable product and of individual submittal requirements will also satisfy other submittal requirements.

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**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 016000**

## SECTION 017300

### EXECUTION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Field engineering and surveying.
  - 3. Installation of the Work.
  - 4. Cutting and patching.
  - 5. Coordination of Owner-installed products.
  - 6. Progress cleaning.
  - 7. Starting and adjusting.
  - 8. Protection of installed construction.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for coordination of Owner-furnished products.
  - 2. Section 013300 "Submittal Procedures" for submitting surveys.
  - 3. Section 017700 "Closeout Procedures" for submitting Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
  - 4. Section 024119 "Selective Demolition" for demolition and removal of selected portions of the building.
  - 5. Section 078413 "Penetration Firestopping" for patching penetrations in fire-rated construction.

##### 1.3 DEFINITIONS

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

##### 1.4 PREINSTALLATION MEETINGS

- A. Cutting and Patching Conference: Conduct conference at Project site.
  - 1. Prior to commencing work requiring cutting and patching, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:
    - a. Contractor's superintendent.
    - b. Trade supervisor responsible for cutting operations.
    - c. Trade supervisor(s) responsible for patching of each type of substrate.
    - d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.

2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

B. Layout Conference: Conduct conference at Project site

1. Prior to establishing layout of new perimeter and structural column grid(s), review building location requirements. Review benchmark, control point, and layout and dimension requirements. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with Project layout to attend, including the following:
  - a. Contractor's superintendent.
  - b. Contractor's personnel responsible for performing Project surveying and layout.
  - c. Professional engineer responsible for performing site survey serving as basis for Project design.
2. Review meanings and intent of dimensions, notes, terms, graphic symbols, and other layout information indicated on the Drawings.
3. Review requirements for including layouts on Shop Drawings and other submittals.
4. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

**1.5 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, or when encountering the need for cutting and patching of elements whose structural function is not known, 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. Plumbing piping systems.
  - f. Mechanical systems piping and ducts.
  - g. Control systems.
  - h. Communication systems.
  - i. Fire-detection and -alarm systems.
  - j. Conveying systems.
  - k. Electrical wiring systems.
  - l. 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 specified products and equipment.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. 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. Use materials that are not considered hazardous.
- B. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.
- 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
  - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
- 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  - 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. 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, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
  2. List of detrimental conditions, including substrates.
  3. List of unacceptable installation tolerances.
  4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### **3.2 PREPARATION**

- A. Existing Utility Information: Furnish information to 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. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 013100 "Project Management and Coordination."

### **3.3 CONSTRUCTION LAYOUT**

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.
- B. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- C. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

### **3.4 FIELD ENGINEERING**

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
  2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

### **3.5 INSTALLATION**

- A. 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.
  4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. 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 with manufacturer.
  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.
- H. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.
- I. Repair or remove and replace damaged, defective, or nonconforming Work.
  1. Comply with Section 017700 "Closeout Procedures" for repairing or removing and replacing defective Work.

### **3.6 CUTTING AND PATCHING**

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

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1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. 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.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching in accordance with requirements in Section 011000 "Summary."
- F. 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 prevent interruption to occupied areas.
- G. 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 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.
- H. 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, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    - b. Restore damaged pipe covering to its original condition.
  3. 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, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

### **3.7 COORDINATION OF OWNER'S PORTION OF THE WORK**

- A. Site Access: Provide access to Project site for Owner's construction personnel.
  1. Provide temporary facilities required for Owner-furnished, Owner-installed products.
  2. Refer to Section 011000 "Summary" for other requirements for Owner-furnished, Owner-installed products.
- B. Coordination: Coordinate construction and operations of the Work with work performed by Owner's construction personnel.
  1. Construction Schedule: Inform Owner of Contractor's preferred construction schedule for Owner's portion of the Work. Adjust construction schedule based on a mutually agreeable timetable. Notify Owner if changes to schedule are required due to differences in actual construction progress.
  2. Preinstallation Conferences: Include Owner's construction personnel at preinstallation conferences covering portions of the Work that are to receive Owner's work. Attend preinstallation conferences conducted by Owner's construction personnel if portions of the Work depend on Owner's construction.

### **3.8 PROGRESS CLEANING**

- A. 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.
  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.
  4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- B. Site: Maintain Project site free of waste materials and debris.
- 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.

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- 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: 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. Comply with waste disposal requirements in Section 017419 "Construction Waste Management and Disposal."
- 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 ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

**3.9 STARTING AND ADJUSTING**

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

**3.10 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION**

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.
- D. Comply with manufacturer's written instructions for temperature and relative humidity.

**END OF SECTION 017300**

**SECTION 017419**

**CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for the following:
  - 1. Disposing of nonhazardous demolition and construction waste.
- B. Related Requirements:
  - 1. Section 042200 "Concrete Unit Masonry" for disposal requirements for masonry waste.
  - 2. Section 042613 "Masonry Veneer" for disposal requirements for masonry waste.
  - 3. Section 047200 "Cast Stone Masonry" for disposal requirements for masonry waste.
  - 4. Section 044313.13 "Anchored Stone Masonry Veneer" for disposal requirements for excess stone and stone waste.

**1.3 DEFINITIONS**

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.
- C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- D. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

**1.4 MATERIALS OWNERSHIP**

- A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Refrigerant Recovery: Comply with requirements in Section 024119 "Selective Demolition" for refrigerant recovery submittals.

**1.6 QUALITY ASSURANCE**

- A. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. General: Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials including the following:

1. Demolition Waste:
  - a. Asphalt paving.
  - b. Concrete.
  - c. Concrete reinforcing steel.
  - d. Brick.
  - e. Concrete masonry units
  - f. Cast stone units
  - g. Stone.
  - h. Plywood and oriented strand board.
  - i. Wood paneling.
  - j. Wood trim.
  - k. Structural and miscellaneous steel.
  - l. Rough hardware.
  - m. Roofing.
  - n. Insulation.
  - o. Doors and frames.
  - p. Door hardware.
  - q. Windows.
  - r. Glazing.
  - s. Metal studs.
  - t. Gypsum board.
  - u. Acoustical tile and panels.
  - v. Carpet.
  - w. Carpet pad.
  - x. Equipment.
  - y. Cabinets.
  - z. Plumbing fixtures.
  - aa. Piping.
  - bb. Supports and hangers.
  - cc. Valves.
  - dd. Sprinklers.
  - ee. Mechanical equipment.
  - ff. Refrigerants.
  - gg. Electrical conduit.
  - hh. Copper wiring.
  - ii. Lighting fixtures.
  - jj. Lamps.
  - kk. Ballasts.
  - ll. Electrical devices.
  - mm. Switchgear and panelboards.
  - nn. Transformers.
2. Construction Waste:
  - a. Masonry and CMU.
  - b. Lumber.
  - c. Wood sheet materials.
  - d. Wood trim.

- e. Metals.
- f. Roofing.
- g. Insulation.
- h. Carpet and pad.
- i. Gypsum board.
- j. Piping.
- k. Electrical conduit.
- l. Packaging:
  - 1) Paper.
  - 2) Cardboard.
  - 3) Boxes.
  - 4) Plastic sheet and film.
  - 5) Polystyrene packaging.
  - 6) Wood crates.
  - 7) Wood pallets.
  - 8) Plastic pails.
- m. Construction Office Waste:
  - 1) Paper.
  - 2) Aluminum cans.
  - 3) Glass containers.

### **PART 3 - EXECUTION**

#### **3.1 PLAN IMPLEMENTATION**

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
  - 1. Comply with operation, termination, and removal requirements in Section 015000 "Temporary Facilities and Controls."
- B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
  - 1. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

#### **3.2 SALVAGING DEMOLITION WASTE**

- A. Comply with requirements in Section 024119 "Selective Demolition" for salvaging demolition waste.
- B. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
  - 1. Clean salvaged items.
  - 2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
  - 3. Store items in a secure area until installation.
  - 4. Protect items from damage during transport and storage.
  - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.



**3.3 DISPOSAL OF WASTE**

- A. General: Remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
  - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
  - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. General: Except for items or materials to be salvaged or recycled, remove waste materials and legally dispose of at designated spoil areas on Owner's property.
- C. Burning: Do not burn waste materials.

**END OF SECTION 017419**

## SECTION 017500

### PROJECT WARRANTIES

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

- 1. Warranties.

- B. Related Requirements:

- 1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
  - 2. Section 017700 "Closeout Procedures" for warranty submittal requirements prior to Substantial Completion.
  - 3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

##### 1.3 PROJECT WARRANTIES

- A. The following items are to be submitted the Architect and Owner as part of this Section.

- B. 1. Copies of all manufacturers; punch lists and documentation of completion.

- C. 2. Copies of all consultants' punch lists and documents of completion.

- D. 3. Manufacturer's report that roof has been inspected and is suitable for warranty.

- E. 4. Contractor's written **two (2) year guarantee** covering all materials and labor.

- F. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

- G. Partial Occupancy: Submit properly executed warranties within fifteen (15) days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

- H. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

- I. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

- 1. Submit on digital media acceptable to Architect

- J. Warranties in Paper Form:

- 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

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3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES,"  
Project name, and name of Contractor.

K. Provide additional copies of each warranty to include in operation and maintenance manuals.

**PART 2 - PRODUCTS – NOT USED**

**PART 3 - EXECUTION**

**3.1 SUBMITTAL OF PROJECT WARRANTIES**

A. Substantial Completion: Submit all required documentation upon completion of the work and  
prior to final payment.

B. All warranties are to be submitted to the Owner prior to final payment.

**END OF SECTION 017500**

**SECTION 017700**

**CLOSEOUT PROCEDURES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

- 1. Substantial Completion procedures.
- 2. Final completion procedures.
- 3. Warranties.
- 4. Final cleaning.

- B. Related Requirements:

- 1. Section 012900 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
- 2. Section 017500 "Project Warranties" for warranty submittal requirements prior to Substantial Completion.
- 3. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
- 4. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.

**1.3 DEFINITIONS**

- A. List of Incomplete Items: Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

**1.5 CLOSEOUT SUBMITTALS**

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest-control inspection.

**1.6 MAINTENANCE MATERIAL SUBMITTALS**

- A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

**1.7 SUBSTANTIAL COMPLETION PROCEDURES**

- A. 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.

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- B. Submittals Prior to Substantial Completion: Complete the following a minimum of ten (10) days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. 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.
  2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
  3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Submit maintenance material submittals specified in individual 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.
    - a. 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. Obtain Architect's for receipt of submittals.
  5. Submit testing, adjusting, and balancing records.
  6. Submit sustainable design submittals not previously submitted.
  7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of ten (10) days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
  2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  3. Complete startup and testing of systems and equipment.
  4. Perform preventive maintenance on equipment used prior to Substantial Completion.
  5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
  6. Advise Owner of changeover in utility services.
  7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  9. Complete final cleaning requirements.
  10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of ten (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 that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for Final Completion.

## 1.8 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
  2. 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.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report.
  5. Submit Final Completion photographic documentation.
- B. Inspection: Submit a written request for final inspection to determine acceptance 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 a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

## 1.9 LIST OF INCOMPLETE ITEMS

- A. 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.
1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor listed by room or space number.
  2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
  3. Include the following information at the top of each page:
    - a. Project name.
    - b. Date.
    - c. Name of Architect
    - d. Name of Contractor.
    - e. Page number.
  4. Submit list of incomplete items in the following format:
    - a. PDF Electronic File: Architect will return annotated file.
    - b. Three (3) Paper Copies: Architect will return two (2) copies.

## 1.10 SUBMITTAL OF PROJECT WARRANTIES

- A. The following items are to be submitted the Architect and Owner.
- B. 1. Copies of all manufacturers; punch lists and documentation of completion.
- C. 2. Copies of all consultants' punch lists and documents of completion.
- D. 3. Manufacturer's report that roof has been inspected and is suitable for warranty.
- E. 4. Contractor's written **two (2) year guarantee** covering all materials and labor.
- F. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

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- G. Partial Occupancy: Submit properly executed warranties within fifteen (15) days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- H. Substantial Completion: Submit all required documentation upon completion of the work and prior to final payment.
- I. All warranties are to be submitted to the Owner prior to final payment.
- J. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- K. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
  - 1. Submit on digital media acceptable to Architect
- L. Warranties in Paper Form:
  - 1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
  - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
  - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- M. Provide additional copies of each warranty to include in operation and maintenance manuals.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

**PART 3 - EXECUTION**

**3.1 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 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 not planted, mulched, or paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. 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.

- f. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - g. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
  - h. Vacuum and mop concrete.
  - 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 ducts, blowers, and coils if units were operated without filters during construction, or that display contamination with particulate matter on inspection.
  - p. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
  - q. Clean strainers.
  - r. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 017419 "Construction Waste Management and Disposal."

### **3.2 REPAIR OF THE WORK**

- A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

**END OF SECTION 017700**



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**SECTION 017823**

**OPERATION AND MAINTENANCE DATA**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
  - 1. Operation and maintenance documentation directory manuals.
  - 2. Emergency manuals.
  - 3. Systems and equipment operation manuals.
  - 4. Systems and equipment maintenance manuals.
  - 5. Product maintenance manuals.
- B. Related Requirements:
  - 1. Section 013300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

**1.3 DEFINITIONS**

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

**1.4 CLOSEOUT SUBMITTALS**

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
  - 1. Architect
  - 2. Architect will comment on whether content of operation and maintenance submittals is acceptable.
  - 3. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:
  - 1. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.
  - 2. Submit three (3) paper copies. Architect will return two (2) copies.
- C. Initial Manual Submittal: Submit draft copy of each manual at least thirty (30) days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least fifteen (15) days before commencing demonstration and training. Architect will return copy with comments.
  - 1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within fifteen (15) days of receipt of Architect's comments and prior to commencing demonstration and training.
- E. Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

## 1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
  - 1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
  - 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
  - 1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
    - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
    - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
  - 2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
  - 3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
  - 4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
  - 5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
    - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in

manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

## **1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS**

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
  - 1. Title page.
  - 2. Table of contents.
  - 3. Manual contents.
- B. Title Page: Include the following information:
  - 1. Subject matter included in manual.
  - 2. Name and address of Project.
  - 3. Name and address of Owner.
  - 4. Date of submittal.
  - 5. Name and contact information for Contractor.
  - 6. Name and contact information for Architect.
  - 7. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
  - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

## **1.7 EMERGENCY MANUALS**

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
  - 1. Type of emergency.
  - 2. Emergency instructions.
  - 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
  - 1. Fire.

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2. Flood.
  3. Gas leak.
  4. Water leak.
  5. Power failure.
  6. Water outage.
  7. System, subsystem, or equipment failure.
  8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
  2. Shutdown instructions for each type of emergency.
  3. Operating instructions for conditions outside normal operating limits.
  4. Required sequences for electric or electronic systems.
  5. Special operating instructions and procedures.

**1.8 SYSTEMS AND EQUIPMENT OPERATION MANUALS**

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
  2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
  2. Performance and design criteria if Contractor has delegated design responsibility.
  3. Operating standards.
  4. Operating procedures.
  5. Operating logs.
  6. Wiring diagrams.
  7. Control diagrams.
  8. Piped system diagrams.
  9. Precautions against improper use.
  10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
  2. Manufacturer's name.
  3. Equipment identification with serial number of each component.
  4. Equipment function.
  5. Operating characteristics.
  6. Limiting conditions.

7. Performance curves.
  8. Engineering data and tests.
  9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
  2. Equipment or system break-in procedures.
  3. Routine and normal operating instructions.
  4. Regulation and control procedures.
  5. Instructions on stopping.
  6. Normal shutdown instructions.
  7. Seasonal and weekend operating instructions.
  8. Required sequences for electric or electronic systems.
  9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

## **1.9 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS**

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
  2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

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- a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
  2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
  3. Identification and nomenclature of parts and components.
  4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
  2. Troubleshooting guide.
  3. Precautions against improper maintenance.
  4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  5. Aligning, adjusting, and checking instructions.
  6. Demonstration and training video recording, if available.
- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
  2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of maintenance manuals.

**1.10 PRODUCT MAINTENANCE MANUALS**

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Product Information: Include the following, as applicable:
  - 1. Product name and model number.
  - 2. Manufacturer's name.
  - 3. Color, pattern, and texture.
  - 4. Material and chemical composition.
  - 5. Reordering information for specially manufactured products.
- E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
  - 1. Inspection procedures.
  - 2. Types of cleaning agents to be used and methods of cleaning.
  - 3. List of cleaning agents and methods of cleaning detrimental to product.
  - 4. Schedule for routine cleaning and maintenance.
  - 5. Repair instructions.
- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
  - 1. Include procedures to follow and required notifications for warranty claims.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 017823**



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**SECTION 017839**

**PROJECT RECORD DOCUMENTS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
  - 1. Record Drawings.
  - 2. Record specifications.
  - 3. Record Product Data.
  - 4. Miscellaneous record submittals.
- B. Related Requirements:
  - 1. Section 017300 "Execution" for final property survey.
  - 2. Section 017700 "Closeout Procedures" for general closeout procedures.
  - 3. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

**1.3 CLOSEOUT SUBMITTALS**

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one (1) set of marked-up record prints.
  - 2. Number of Copies: Submit copies of Record Drawings as follows:
    - a. Initial Submittal:
      - 1) Submit PDF electronic files of scanned record prints and one (1) set of file prints.
    - b. Final Submittal:
      - 1) Submit PDF electronic files of scanned Record Prints and three (3) sets of file prints.
- B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.
- C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
  - 1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

**1.4 RECORD DRAWINGS**

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
  - 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

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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 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.
  - 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 prints 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.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Annotated PDF electronic file with comment function enabled.
  2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
  3. Refer instances of uncertainty to Architect for resolution.
- a. See Section 013100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
- C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
  2. Format: Annotated PDF electronic file with comment function enabled.

3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:
  - a. Project name.
  - b. Date.
  - c. Designation "PROJECT RECORD DRAWINGS."
  - d. Name of Architect.
  - e. Name of Contractor.

#### **1.5 RECORD SPECIFICATIONS**

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
  3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
  4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
  5. Note related Change Orders Record Product Data and Record Drawings where applicable.
- B. Format: Submit record specifications as scanned PDF electronic file(s) of marked-up paper copy of Specifications.

#### **1.6 RECORD PRODUCT DATA**

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
  1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
  2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
  3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
- C. Format: Submit Record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.
  1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

#### **1.7 MISCELLANEOUS RECORD SUBMITTALS**

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as scanned PDF electronic file(s) of marked-up miscellaneous record submittals.

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1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

**1.8 MAINTENANCE OF RECORD DOCUMENTS**

- A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for the Architect's reference during normal working hours.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION 017839**

## SECTION 024119

### SELECTIVE DEMOLITION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Demolition and removal of selected portions of building or structure.
  - 2. Demolition and removal of selected site elements.
  - 3. Patching and repairs.
  - 4. Salvage of existing items to be reused or recycled.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
  - 2. Section 017300 "Execution" for cutting and patching procedures.
  - 3. Section 013516 "Alteration Project Procedures" for general protection and work procedures for alteration projects.

##### 1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and store.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled. Protect construction indicated to remain against damage and soiling during selective demolition.
- E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

##### 1.4 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

##### 1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.

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1. Inspect and discuss condition of construction to be selectively demolished.
2. Review structural load limitations of existing structure.
3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
5. Review areas where existing construction is to remain and requires protection.

**1.6 INFORMATIONAL SUBMITTALS**

- A. Engineering Survey: Submit engineering survey of condition of building.
- B. Proposed Protection Measures: Submit report, including Drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers.
- C. Schedule of Selective Demolition Activities: Indicate the following:
  1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
  2. Interruption of utility services. Indicate how long utility services will be interrupted.
  3. Coordination for shutoff, capping, and continuation of utility services.
  4. Use of elevator and stairs.
  5. Coordination of Owner's continuing occupancy of portions of existing building.
- D. Predemolition Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by demolition operations.
- E. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

**1.7 CLOSEOUT SUBMITTALS**

- A. Record drawings at Project closeout according to Division 1 Section 017700 "Closeout Procedures.
- B. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

**1.8 FIELD CONDITIONS**

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Storage or sale of removed items or materials on-site is not permitted.

- E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  - 1. Maintain fire-protection facilities in service during selective demolition operations.

## **1.9 COORDINATION**

- A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ASSE A10.6 and NFPA 241.

### **2.2 REPAIR MATERIALS**

- A. Use repair materials identical to existing materials.
  - 1. Where identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
  - 2. Use materials whose installed performance equals or surpasses that of existing materials.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.
- C. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video.
  - 1. Inventory and record the condition of items to be removed and reinstalled, and items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
  - 2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.
  - 3. Perform inspections as the Work progresses to detect hazards resulting from selective demolition activities.

### **3.2 PREPARATION**

- A. Refrigerant: Before starting demolition, remove refrigerant from mechanical equipment according to 40 CFR 82 and regulations of authorities having jurisdiction.



### 3.3 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. 1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized in writing by Owner and authorities having jurisdiction, Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to governing authorities.
- C. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

Owner will arrange to shut off indicated services/systems when requested by Contractor.

- 1. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
- 2. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
  - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
  - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
  - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
  - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
  - e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
  - f. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

### 3.4 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
  - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
  - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
  - 3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
  - 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
  - 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and

finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

C. Remove temporary barricades and protections where hazards no longer exist.

### **3.5 PREPARATION**

A. Conduct demolitions operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

### **3.6 SELECTIVE DEMOLITION, GENERAL**

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
5. Maintain fire watch during and for at least two (2) hours after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly. Comply with requirements in Section 017419 "Construction Waste Management and Disposal."

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner
5. Protect items from damage during transport and storage.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition, cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.7 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in small sections. Using power-driven saw, cut concrete to a depth of at least 3/4 inch at junctures with construction to remain. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete. Neatly trim openings to dimensions indicated.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings." Do not use methods requiring solvent-based adhesive strippers.
- E. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. See Section 074113.16 Standing-Seam Metal Roof Panels and Section 075423 Thermoplastic-Polyolefin (TPO) Roofing for new roofing requirements.
1. Remove existing roof membrane, flashings, copings, and roof accessories.
  2. Remove existing roofing system down to substrate.

### 3.8 POLLUTION CONTROLS

- A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.
1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding and pollution.
- B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

### 3.9 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction, and

recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

**3.10 CLEANING**

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

**END OF SECTION 024119**

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**SECTION 033000  
CAST-IN-PLACE CONCRETE**

**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 specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
  - 1. Footings.
  - 2. Slabs-on-grade.  
Suspended slabs.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
  - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Welding certificates.
- E. Material Certificates: For each of the following, signed by manufacturers:
  - 1. Cementitious materials.
  - 2. Admixtures.
  - 3. Form materials and form-release agents.
  - 4. Steel reinforcement and accessories.
  - 5. Fiber reinforcement.

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6. Waterstops.
7. Curing compounds.
8. Bonding agents.
9. Adhesives.
10. Vapor retarders.

- F. Floor surface flatness and levelness measurements to determine compliance with specified tolerances.
- G. Field quality-control test and inspection reports.
- H. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. 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."
- C. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
  1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
  2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- E. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code-Reinforcing Steel."
- F. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5. Sections 1 through 5 and Section 7, "Lightweight Concrete."
  2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- G. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

**PART 2 - PRODUCTS**

2.1 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. 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.

2.2 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.
  - 1. Plywood, metal, or other approved panel materials.
  - 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
    - a. High-density overlay, Class 1 or better.
    - b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
    - c. Structural 1, B-B or better; mill oiled and edge sealed.
    - d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
- 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.
- C. Forms for Cylindrical Columns, Pedestals, and Supports: Metal, glass-fiber-reinforced plastic, paper, or fiber tubes that will produce surfaces with gradual or abrupt irregularities not exceeding specified formwork surface class. Provide units with sufficient wall thickness to resist plastic concrete loads without detrimental deformation.
- D. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
  - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.



## 2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

## 2.4 REINFORCEMENT ACCESSORIES

- A. 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," of greater compressive strength than concrete and as follows:
  - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
  - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.
  - 3. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

## 2.5 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 II,
    - a. Fly Ash: ASTM C 618, Class F.
    - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. 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.
  - 1. Maximum Coarse-Aggregate Size: 3/4 inches nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M.

## 2.6 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.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.7 FIBER REINFORCEMENT

- A. Synthetic Fiber: Monofilament polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.
1. Available Products:
    - a. Monofilament Fibers:
      - 1) Axim Concrete Technologies; Fibrasol IIP.
      - 2) Euclid Chemical Company (The); Fiberstrand 100.
      - 3) FORTA Corporation; Forta Mono.
      - 4) Grace Construction Products, W. R. Grace & Co.; Grace MicroFiber.
      - 5) Metalcrete Industries; Polystrand 1000.
      - 6) SI Concrete Systems; Fibermix Stealth.

## 2.8 VAPOR RETARDERS

- A. Plastic Vapor Retarder: - See Specification Section 07260.
- B. Granular Fill: Clean mixture of crushed stone or crushed or uncrushed gravel; ASTM D 448, Size 57, with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

## 2.9 CURING MATERIALS

- A. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
1. Available Products:
    - a. Anti-Hydro International, Inc.; AH Clear Cure WB.
    - b. Burke by Edoco; Spartan Cote WB II.
    - c. ChemMasters; Safe-Cure & Seal 20.
    - d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Cure and Seal WB.
    - e. Dayton Superior Corporation; Safe Cure and Seal (J-18).
    - f. Euclid Chemical Company (The); Aqua Cure VOX.
    - g. Kaufman Products, Inc.; Cure & Seal 309 Emulsion.
    - h. Lambert Corporation; Glazecote Sealer-20.
    - i. L&M Construction Chemicals, Inc.; Dress & Seal WB.
    - j. Meadows, W. R., Inc.; Vocomp-20.
    - k. Metalcrete Industries; Metcure.
    - l. Nox-Crete Products Group, Kinsman Corporation; Cure & Seal 150E.

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- m. Symons Corporation, a Dayton Superior Company; Cure & Seal 18 Percent E.
- n. Tamms Industries, Inc.; Clearseal WB 150.
- o. Unitex; Hydro Seal.
- p. US Mix Products Company; US Spec Hydrasheen 15 percent
- q. Vexcon Chemicals, Inc.; Starseal 309.

2.10 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.11 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
  - 1. Fly Ash: 15 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
- D. 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.
  - 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, Add locations and dosage of corrosion-inhibiting admixture to subparagraph below if required.

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Footings: Proportion normal-weight concrete mixture as follows:
  - 1. Minimum Compressive Strength: 3000 psi at 28 days.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
  - 3. Slump Limit: 4 inches, plus or minus 1 inch.
- B. Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:
  - 1. Minimum Compressive Strength: 4000 psi at 28 days.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
  - 3. Slump Limit: 3 inches, plus or minus 1 inch.

4. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.
5. Synthetic Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than 1.5 lb/cu. yd..

C. Suspended Slabs: Proportion structural concrete mixture as follows:

1. Minimum Compressive Strength: 4000 psi at 28 days.
2. Calculated Equilibrium Unit Weight: 145 lb/cu. ft., plus or minus 3 lb/cu. ft. as determined by ASTM C 567.
3. Slump Limit: 3 inches, plus or minus 1 inch.
4. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent.

## 2.13 FABRICATING REINFORCEMENT

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

## 2.14 CONCRETE MIXING

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

## PART 3 - EXECUTION

### 3.1 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. Construct forms tight enough to prevent loss of concrete mortar.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
1. Install keyways, reglets, recesses, and the like, for easy removal.
  2. Do not use rust-stained steel form-facing material.
- E. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

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- F. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- G. Chamfer exterior corners and edges of permanently exposed concrete.
- H. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

### 3.2 VAPOR RETARDERS

- A. Plastic Vapor Retarders – See Specification Section 072600.
- B. Granular Course: Place granular, and compact with mechanical equipment to elevation tolerances of plus 0 inch or minus 3/4 inch.

### 3.3 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.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

### 3.4 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.
  - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
  - 2. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
  - 3. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
  
- 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:
  - 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- 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.
  - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
  - 2. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

### 3.5 WATERSTOPS

- A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.
  
- B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

### 3.6 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. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
  - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

- C. 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. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
  - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
  - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
  
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
  - 1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
  - 2. Maintain reinforcement in position on chairs during concrete placement.
  - 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
  - 4. Slope surfaces uniformly to drains where required.
  - 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
  
- E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
  - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
  
- F. Hot-Weather Placement: Comply with ACI 301 and as follows:
  - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

### 3.7 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, 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 in 1 direction.
  - 1. Apply scratch finish to surfaces indicated and to receive mortar setting beds for bonded cementitious floor finishes.
- 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 restraightening until surface is left with a uniform, smooth, granular texture.
  - 1. Apply float finish to surfaces indicated to receive trowel finish and 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 and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 10-foot- long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/8 inch

### 3.8 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.
- C. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

### 3.9 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 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. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- D. 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 with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  - 2. 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. 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.

### 3.10 JOINT FILLING

- A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
  - 1. Defer joint filling until concrete has aged at least one month(s). Do not fill joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

### 3.11 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.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.
- C. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

D. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

E. Repair materials and installation not specified above may be used, subject to Architect's approval.

### 3.12 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.

B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel reinforcement placement.
2. Steel reinforcement welding.
3. Headed bolts and studs.
4. Verification of use of required design mixture.
5. Concrete placement, including conveying and depositing.
6. Curing procedures and maintenance of curing temperature.
7. Verification of concrete strength before removal of shores and forms from beams and slabs.

- D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
  2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
    - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
  4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
  6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
  7. Compression Test Specimens: ASTM C 31/C 31M.
    - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
  8. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
    - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
  9. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
  10. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
  11. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

12. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
13. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
14. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
15. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION 033000

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**SECTION 040110**

**MASONRY CLEANING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes cleaning the following:

- 1. Unit masonry surfaces.

**1.3 DEFINITIONS**

- A. Very Low-Pressure Spray: Under 100 psi.
- B. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.

**1.4 SEQUENCING AND SCHEDULING**

- A. Work Sequence: Perform masonry-cleaning work in the following sequence:

- 1. Remove plant growth.
- 2. Inspect for open mortar joints. Where repairs are required, delay further cleaning work until after repairs are completed, cured, and dried to prevent the intrusion of water and other cleaning materials into the wall.
- 3. Remove paint.
- 4. Clean masonry surfaces.
- 5. Where water repellents are to be used on or near masonry, delay application of these chemicals until after cleaning.

**1.5 QUALITY ASSURANCE**

- A. Mockups: Prepare mockups of cleaning on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution.

- 1. Cleaning: Clean an area approximately 1 sq. ft. for each type of masonry and surface condition.
  - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not test cleaners and methods known to have deleterious effect.
  - b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.
- 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

**1.6 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit masonry-cleaning work to be performed according to product manufacturers' written instructions and specified requirements.
- B. Clean masonry surfaces only when air temperature is 40 deg. F and above and is predicted to remain so for at least seven days after completion of cleaning.

**PART 2 - PRODUCTS**

- A. Low-Odor, Solvent-Type Paste Paint Remover: Manufacturer's standard low-odor, water-rinsable, solvent-type paste, gel, or foamed emulsion formulation, for removing paint from masonry; containing no methanol or methylene chloride.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. PROSOCO, Inc.

**2.2 CLEANING MATERIALS**

- A. Water: Potable.
- B. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
- C. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.
- D. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. PROSOCO, Inc.

**2.3 ACCESSORY MATERIALS**

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline masonry cleaners.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. PROSOCO, Inc.

### **PART 3 - EXECUTION**

#### **3.1 PROTECTION**

- A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent paint removers and chemical cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with materials that are proven to resist paint removers and chemical cleaners used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents according to manufacturer's written instructions. Do not apply liquid strippable masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
  - 2. Do not apply chemical solutions during winds of enough force to spread them to unprotected surfaces.
  - 3. Neutralize alkaline and acid wastes before disposal.
  - 4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
  - 5. Provide temporary rain drainage during work to direct water away from building.

#### **3.2 CLEANING MASONRY, GENERAL**

- A. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.
- B. Proceed with cleaning in an orderly manner; work from bottom to top of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.
- C. Use only those cleaning methods indicated for each masonry material and location.
  - 1. Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
  - 2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage surfaces, including joints.
    - a. Equip units with pressure gages.
    - b. For chemical cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.
    - c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.
- D. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces. Keep wall wet below area being cleaned to prevent streaking from runoff.



- E. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed according to the "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.
- F. Water Application Methods:
  - 1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
  - 2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from masonry surface and apply water in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.
- G. .Chemical Cleaner Application Methods: Apply chemical cleaners to masonry surfaces according to chemical-cleaner manufacturer's written instructions; use brush **or** spray application. Do not spray apply at pressures exceeding 50 psi. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.
- H. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
  - 1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- I. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

### **3.3 PRELIMINARY CLEANING**

- A. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods. Extraneous substances include paint, calking, asphalt, and tar.
  - 1. Carefully remove heavy accumulations of rigid materials from masonry surface with sharp chisel. Do not scratch or chip masonry surface.
  - 2. Remove paint and calking with alkaline paint remover.
    - a. Repeat application up to two times if needed.

### **3.4 PAINT REMOVAL**

- A. Paint-Remover Application, General: Apply paint removers according to paint-remover manufacturer's written instructions. Do not allow paint removers to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.
- B. Paint Removal with Alkaline Paste Paint Remover:
  - 1. Remove loose and peeling paint using low to medium pressure water spray, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
  - 2. Apply paint remover to dry, painted surface with brushes.
  - 3. Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.
  - 4. Rinse with cold water applied by low to medium pressure spray to remove chemicals and paint residue.

5. Repeat process if necessary to remove all paint.
6. Apply acidic cleaner or manufacturer's recommended after wash to surface, while surface is still wet, using low-pressure spray equipment or soft-fiber brush. Let cleaner or after wash remain on surface as a neutralizing agent for period recommended in writing by chemical-cleaner or after wash manufacturer.
7. Rinse with cold water applied by low to medium-pressure spray to remove chemicals and soil.

### **3.5 CLEANING MASONRY**

- A. Cold-Water Wash: Use cold water applied by low pressure spray.
- B. Detergent Cleaning:
  1. Wet surface with cold water applied by low-pressure spray.
  2. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
  3. Rinse with cold water applied by low pressure spray to remove detergent solution and soil.
  4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.
- C. Mold, Mildew, and Algae Removal:
  1. Wet surface with cold water applied by low-pressure spray.
  2. Apply mold, mildew, and algae remover by brush or low-pressure spray.
  3. Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.
  4. Rinse with cold water applied by low pressure spray to remove mold, mildew, and algae remover and soil.
  5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.
- D. Nonacidic Liquid Chemical Cleaning:
  1. Wet surface with cold water applied by low-pressure spray.
  2. Apply cleaner to surface in two applications by brush or low-pressure spray.
  3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
  4. Rinse with cold water applied by low pressure spray to remove chemicals and soil.
  5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once. If additional cleaning is required, use steam cleaning.

### **3.6 FINAL CLEANING**

- A. Clean adjacent nonmasonry surfaces of spillage and debris. Use detergent and soft brushes or cloths.

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- B. Remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- C. Remove masking materials, leaving no residues that could trap dirt.

**END OF SECTION 040110**

**SECTION 040120.63**

**BRICK MASONRY REPAIR**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Repairing brick masonry.
  - 2. Removing abandoned anchors.
  - 3. Painting steel uncovered during the work.
- B. Related Requirements:
  - 1. Section 013516 "Alteration Project Procedures" for general remodeling, renovation, repair, and maintenance requirements.

**1.3 DEFINITIONS**

- A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
- B. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.
- C. Saturation Coefficient: Ratio of the weight of water absorbed during immersion in cold water to weight absorbed during immersion in boiling water; used as an indication of resistance of bricks to freezing and thawing.

**1.4 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to brick masonry repair including, but not limited to, the following:
    - a. Verify brick masonry repair specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
    - b. Materials, material application, sequencing, tolerances, and required clearances.
    - c. Quality-control program.
    - d. Coordination with building occupants.

**1.5 SEQUENCING AND SCHEDULING**

- A. Order sand and gray portland cement for colored mortar immediately after approval of Samples. Take delivery of and store at Project site enough quantity to complete Project.
- B. Work Sequence: Perform brick masonry repair work in the following sequence, which includes work specified in this and other Sections:
  - 1. Remove plant growth.

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2. Inspect masonry for open mortar joints and point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
  3. Remove paint.
  4. Clean masonry.
  5. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
  6. Repair masonry, including replacing existing masonry with new masonry materials.
  7. Rake out mortar from joints to be repointed.
  8. Point mortar and sealant joints.
  9. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
  10. Where water repellents are to be used on or near masonry work, delay application of these chemicals until after pointing and cleaning.
- C. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in bricks according to "Brick Masonry Patching" Article. Patch holes in mortar joints according to Section 040120.64 "Brick Masonry Repointing."

## 1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
  2. Include recommendations for product application and use.
  3. Include test data substantiating that products comply with requirements.
- B. Shop Drawings:
1. Include plans, elevations, sections, and locations of replacement bricks on the structure, showing relation of existing and new or relocated units.
  2. Show provisions for expansion joints or other sealant joints.
  3. Show provisions for flashing, lighting fixtures, conduits, and weep holes as required.
  4. Show locations of scaffolding and points of scaffolding in contact with masonry. Include details of each point of contact or anchorage.
- C. Samples for Initial Selection: For the following:
1. Colored Mortar: Submit sets of mortar that will be left exposed in the form of sample mortar strips, 6 inches long by 1/2 inch wide, set in aluminum or plastic channels.
    - a. Have each set contain a close color range of at least three Samples of different mixes of colored sands and cements that produce a mortar matching existing, cleaned mortar when cured and dry.
    - b. Submit with precise measurements on ingredients, proportions, gradations, and source of colored sands from which each Sample was made.
  2. Sand Types Used for Mortar: Minimum 8 oz. of each in plastic screw-top jars.
  3. Patching Compound: Submit sets of patching compound Samples in the form of plugs (patches in drilled holes) in sample units of masonry representative of the range of masonry colors on the building.
    - a. Have each set contain a close color range of at least three Samples of different mixes of patching compound that matches the variations in existing masonry when cured and dry.

4. Include similar Samples of accessories involving color selection.
- D. Samples for Verification: For the following:
1. Each type of brick unit to be used for replacing existing units. Include sets of Samples to show the full range of shape, color, and texture to be expected. For each brick type, provide straps or panels containing at least four bricks. Include multiple straps for brick with a wide range.
  2. Each type of patching compound in the form of briquettes, at least 3 inches long by 1-1/2 inches wide. Document each Sample with manufacturer and stock number or other information necessary to order additional material.
  3. Accessories: Each type of accessory and miscellaneous support.

#### **1.7 QUALITY ASSURANCE**

- A. Brick Masonry Repair Specialist Qualifications: Engage an experienced brick masonry repair firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry repair work.
1. Brick Masonry Repair Worker Qualifications: When bricks are being patched, assign at least one worker per crew who is trained and certified by manufacturer of patching compound to apply its products.

#### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver bricks to Project site strapped together in suitable packs or pallets or in heavy-duty cartons and protected against impact and chipping.
- B. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- E. Store sand where grading and other required characteristics can be maintained and contamination avoided.
- F. Handle bricks to prevent overstressing, chipping, defacement, and other damage.

#### **1.9 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit brick masonry repair work to be performed according to product manufacturers' written instructions and specified requirements.
- B. Temperature Limits: Repair brick masonry only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for masonry repair unless otherwise indicated:
1. When air temperature is below 40 deg F, heat mortar ingredients, masonry repair materials, and existing masonry walls to produce temperatures between 40 and 120 deg F.

2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after repair.
- D. Hot-Weather Requirements: Protect masonry repairs when temperature and humidity conditions produce excessive evaporation of water from mortar and repair materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.
- E. For manufactured repair materials, perform work within the environmental limits set by each manufacturer.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Source Limitations: Obtain each type of material for repairing brick masonry (brick, cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

### **2.2 MASONRY MATERIALS**

- A. Face Brick: As required to complete brick masonry repair work.
1. Brick Matching Existing: Units with colors, color variation within units, surface texture, size, and shape that match existing brickwork and with physical properties.
    - a. For existing brickwork that exhibits a range of colors or color variation within units, provide brick that proportionally matches that range and variation rather than brick that matches an individual color within that range.
- B. Building Brick: ASTM C62, of same vertical dimension as face brick, for masonry work concealed from view.
1. Grade SW where in contact with earth.
  2. Grade SW or MW for concealed backup.

### **2.3 MORTAR MATERIALS**

- A. Portland Cement: ASTM C150/C150M, Type I or Type II, except Type III may be used for cold-weather construction; white or gray, or both where required for color matching of mortar.
1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Masonry Cement: ASTM C91/C91M.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Essroc.
    - b. Holcim (US) Inc.
    - c. Lafarge North America Inc.

d. Quikrete; The QUIKRETE Companies, LLC.

D. Mortar Cement: ASTM C1329/C1329M.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

a. Lafarge North America Inc.

E. Mortar Sand: ASTM C144.

1. Exposed Mortar: Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
2. Colored Mortar: Natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.

F. Water: Potable.

## 2.4 MANUFACTURED REPAIR MATERIALS

A. Brick Patching Compound: Factory-mixed cementitious product that is custom manufactured for patching brick masonry.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Cathedral Stone Products, Inc.

b. Edison Coatings, Inc.

2. Use formulation that is vapor and water permeable (equal to or more than the brick), exhibits low shrinkage, has lower modulus of elasticity than bricks being repaired, and develops high bond strength to all types of masonry.
3. Use formulation having working qualities and retardation control to permit forming and sculpturing where necessary.
4. Formulate patching compound in colors and textures to match each brick being patched. Provide no fewer than three colors to enable matching of the color, texture, and variation of each unit.

## 2.5 ACCESSORY MATERIALS

A. Setting Buttons and Shims: Resilient plastic, nonstaining to masonry, sized to suit joint thicknesses and bed depths of bricks, less the required depth of pointing materials unless removed before pointing.

B. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.

C. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer according to MPI #23 (surface-tolerant, anticorrosive metal primer) or SSPC-Paint 20 or SSPC-Paint 29 zinc-rich coating

D. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:

1. Previous effectiveness in performing the work involved.



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2. Minimal possibility of damaging exposed surfaces.
3. Consistency of each application.
4. Uniformity of the resulting overall appearance.
5. Do not use products or tools that could leave residue on surfaces.

## **2.6 MORTAR MIXES**

- A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
- B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.
- C. Do not use admixtures in mortar unless otherwise indicated.
- D. Mixes: Mix mortar materials in the following proportions:
  1. Rebuilding (Setting) Mortar by Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime, masonry cement or mortar cement.

## **PART 3 - EXECUTION**

### **3.1 PROTECTION**

- A. Prevent mortar from staining face of surrounding masonry and other surfaces.
  1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
  2. Keep wall area wet below rebuilding and repair work to discourage mortar from adhering.
  3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.
- B. Remove gutters and downspouts and associated hardware adjacent to masonry and store during masonry repair. Reinstall when repairs are complete.
  1. Provide temporary rain drainage during work to direct water away from building.

### **3.2 MASONRY REPAIR, GENERAL**

- A. Appearance Standard: Repaired surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.

### **3.3 ABANDONED ANCHOR REMOVAL**

- A. Remove abandoned anchors, brackets, wood nailers, and other extraneous items no longer in use unless indicated to remain.
  1. Remove items carefully to avoid spalling or cracking masonry.
  2. Notify Architect before proceeding if an item cannot be removed without damaging surrounding masonry. Do the following where directed:
    - a. Cut or grind off item approximately 3/4 inch beneath surface and core drill a recess of same depth in surrounding masonry as close around item as practical.
    - b. Immediately paint exposed end of item with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended dry film thickness per coat. Keep paint off sides of recess.

3. Patch hole where each item was removed unless directed to remove and replace bricks.

### **3.4 BRICK REMOVAL AND REPLACEMENT**

- A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated or are to be reused. Carefully remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.
  1. When removing single bricks, remove material from center of brick and work toward outside edges.
- B. Support and protect remaining masonry that surrounds removal area.
- C. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition. Coordinate with new flashing, reinforcement, and lintels, which are specified in other Sections.
- D. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
- E. Remove in an undamaged condition as many whole bricks as possible.
  1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
  2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
  3. Store brick for reuse. Store off ground, on skids, and protected from weather.
  4. Deliver cleaned brick not required for reuse to Owner unless otherwise indicated.
- F. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for brick replacement.
- G. Replace removed damaged brick with other removed brick in good condition, where possible, or with new brick matching existing brick. Do not use broken units unless they can be cut to usable size.
- H. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.
  1. Maintain joint width for replacement units to match existing joints.
  2. Use setting buttons or shims to set units accurately spaced with uniform joints.
- I. Lay replacement brick with rebuilding (setting) mortar and with completely filled bed, head, and collar joints. Butter ends with enough mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.
  1. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.
  2. Rake out mortar used for laying brick before mortar sets according to Section 040120.64 "Brick Masonry Repointing." Point at same time as repointing of surrounding area.
  3. When mortar is hard enough to support units, remove shims and other devices interfering with pointing of joints.
- J. Curing: Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.

1. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

### **3.5 PAINTING STEEL UNCOVERED DURING THE WORK**

- A. Notify Architect if steel is exposed during masonry removal. Where Architect determines that steel is structural, or for other reasons cannot be totally removed, prepare and paint it as follows:
  1. Surface Preparation: Remove paint, rust, and other contaminants as applicable to comply with paint manufacturer's recommended preparation.
  2. Antirust Coating: Immediately paint exposed steel with two coats of antirust coating, following coating manufacturer's written instructions and without exceeding manufacturer's recommended rate of application (dry film thickness per coat).

### **3.6 BRICK MASONRY PATCHING**

- A. Patch the following bricks unless another type of repair or replacement is indicated:
  1. Bricks indicated to be patched.
  2. Bricks with holes.
  3. Bricks with chipped edges or corners. Patch chipped edges or corners measuring more than 3/4 inch in least dimension.
  4. Bricks with small areas of deep deterioration. Patch deep deteriorations measuring more than 3/4 inch in least dimension and more than 1/4 inch deep.
- B. Remove and replace existing patches unless otherwise indicated or approved by Architect.
- C. Patching Bricks:
  1. Remove loose material from masonry surface. Carefully remove additional material so patch does not have feathered edges but has square or slightly undercut edges on area to be patched and is at least 1/4 inch thick, but not less than recommended in writing by patching compound manufacturer.
  2. Mask adjacent mortar joint or rake out for repointing if patch extends to edge of brick.
  3. Mix patching compound in individual batches to match each unit being patched. Combine one or more colors of patching compound, as needed, to produce exact match.
  4. Rinse surface to be patched and leave damp, but without standing water.
  5. Brush-coat surfaces with slurry coat of patching compound according to manufacturer's written instructions.
  6. Place patching compound in layers as recommended in writing by patching compound manufacturer, but not less than 1/4 inch or more than 2 inches thick. Roughen surface of each layer to provide a key for next layer.
  7. Trowel, scrape, or carve surface of patch to match texture and surrounding surface plane or contour of brick. Shape and finish surface before or after curing, as determined by testing, to best match existing brick.
  8. Keep each layer damp for 72 hours or until patching compound has set.
  9. Remove and replace patches with hairline cracks or that show separation from brick at edges, and those that do not match adjoining brick in color or texture.

### **3.7 FINAL CLEANING**

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.
  1. Do not use metal scrapers or brushes.

2. Do not use acidic or alkaline cleaners.
- B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.
- C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- D. Remove masking materials, leaving no residues that could trap dirt.

**3.8 FIELD QUALITY CONTROL**

- A. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Notify Architect's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

**3.9 MASONRY WASTE DISPOSAL**

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property.
- B. Masonry Waste: Remove masonry waste and legally dispose of off Owner's property.

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**SECTION 040120.64**

**BRICK MASONRY REPOINTING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Repointing joints with mortar.
  - 2. Repointing joints with sealant.
- B. Related Requirements:
  - 1. Section 013516 "Alteration Project Procedures" for general remodeling, renovation, repair, and maintenance requirements.

**1.3 DEFINITIONS**

- A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm

**1.4 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to repointing brick masonry including, but not limited to, the following:
    - a. Verify brick masonry repointing specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
    - b. Materials, material application, sequencing, tolerances, and required clearances.
    - c. Quality-control program.
    - d. Coordination with building occupants.

**1.5 SEQUENCING AND SCHEDULING**

- A. Order sand and gray portland cement for pointing mortar immediately after approval of Samples. Take delivery of and store at Project site enough quantity to complete Project.
- B. Work Sequence: Perform brick masonry repointing work in the following sequence, which includes work specified in this and other Sections:
  - 1. Remove plant growth.
  - 2. Inspect masonry for open mortar joints and permanently or temporarily point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
  - 3. Remove paint.
  - 4. Clean masonry.
  - 5. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry repairs along joints.
  - 6. Repair masonry, including replacing existing masonry with new masonry materials.
  - 7. Rake out mortar from joints to be repointed.

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8. Point mortar and sealant joints.
  9. After repairs and repointing have been completed and cured, perform a final cleaning to remove residues from this work.
  10. Where water repellents are to be used on or near masonry work, delay application of these chemicals until after pointing and cleaning.
- C. As scaffolding is removed, patch anchor holes used to attach scaffolding. Patch holes in bricks according to Section 040120.63 "Brick Masonry Repair." Patch holes in mortar joints according to "Repointing" Article.

**1.6 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
  2. Include recommendations for product application and use.
  3. Include test data substantiating that products comply with requirements.
- B. Shop Drawings:
1. Include plans, elevations, sections, and locations of repointing work on the structure.
  2. Show provisions for expansion joints or other sealant joints.
  3. Show locations of scaffolding and points of scaffolding in contact with masonry. Include details of each point of contact or anchorage.
- C. Samples for Initial Selection: For the following:
1. Pointing Mortar: Submit sets of mortar for pointing in the form of sample mortar strips, 6 inches long by 1/2 inch wide, set in aluminum or plastic channels.
    - a. Have each set contain a close color range of at least three > Samples of different mixes of colored sands and cements that produce a mortar matching existing, cleaned mortar when cured and dry.
    - b. Submit with precise measurements on ingredients, proportions, gradations, and source of colored sands from which each Sample was made.
  2. Sand Type Used for Pointing Mortar: Minimum 8 oz. of each in plastic screw-top jars.
  3. Sealant materials.
  4. Include similar Samples of accessories involving color selection.
- D. Samples for Verification: For the following:
1. Each type, color, and texture of pointing mortar in the form of sample mortar strips, 6 inches long by 1/2 inch wide, set in aluminum or plastic channels.
    - a. Include with each Sample a list of ingredients with proportions of each. Identify sources, both supplier and quarry, of each type of sand and brand names of cementitious materials and pigments if any.
  2. Sealant materials.
  3. Accessories: Each type of accessory and miscellaneous support.
- E. Brick Masonry Repointing Specialist Qualifications: Engage an experienced brick masonry repointing firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-

service performance. Experience in only installing masonry is insufficient experience for masonry repointing work.

1. Field Supervision: Brick masonry repointing specialist firms shall maintain experienced full-time supervisors on Project site during times that brick masonry repointing work is in progress.

## **1.7 PRECONSTRUCTION TESTING**

## **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.
- 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 hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- D. Store sand where grading and other required characteristics can be maintained and contamination avoided.

## **1.9 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit repointing work to be performed according to product manufacturers' written instructions and specified requirements.
- B. Temperature Limits: Repoint mortar joints only when air temperature is between 40 and 90 deg F and is predicted to remain so for at least seven days after completion of the Work unless otherwise indicated.
- C. Cold-Weather Requirements: Comply with the following procedures for mortar-joint pointing unless otherwise indicated:
  1. When air temperature is below 40 deg F, heat mortar ingredients and existing masonry walls to produce temperatures between 40 and 120 deg F.
  2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after pointing.
- D. Hot-Weather Requirements: Protect mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar materials. Provide artificial shade and wind breaks, and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Source Limitations: Obtain each type of material for repointing brick masonry (cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties.

### **2.2 MORTAR MATERIALS**

- A. Portland Cement: ASTM C150/C150M, Type I or Type II, except Type III may be used for cold-weather construction; white or gray, or both where required for color matching of mortar.



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1. Provide cement containing not more than 0.60 percent total alkali when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Masonry Cement: ASTM C91/C91M.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Essroc.
    - b. Holcim (US) Inc.
    - c. Lafarge North America Inc.
    - d. Quikrete; The QUIKRETE Companies, LLC.
- D. Mortar Cement: ASTM C1329/C1329M.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Lafarge North America Inc.
- E. Mortar Sand: ASTM C144.
  1. Match size, texture, and gradation of existing mortar sand as closely as possible. Blend several sands if necessary to achieve suitable match.
  2. Color: Natural sand or ground marble, granite, or other sound stone of color necessary to produce required mortar color.
- F. Water: Potable.

### 2.3 ACCESSORY MATERIALS

- A. Sealant Materials:
  1. Sealant manufacturer's standard elastomeric sealant(s) of base polymer and characteristics indicated below and according to applicable requirements in Section 079200 "Joint Sealants."
    - a. Type: Single-component, nonsag urethane sealant
  2. Colors: Provide colors of exposed sealants to match colors of mortar adjoining installed sealant unless otherwise indicated.
- B. Joint-Sealant Backing:
  1. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) or Type B (bicellular material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
  2. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended in writing by sealant manufacturer for preventing sealant from adhering to rigid, inflexible, joint-filler

materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

- C. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.
- D. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:
  - 1. Previous effectiveness in performing the work involved.
  - 2. Minimal possibility of damaging exposed surfaces.
  - 3. Consistency of each application.
  - 4. Uniformity of the resulting overall appearance.
  - 5. Do not use products or tools that could leave residue on surfaces.

## **2.4 MORTAR MIXES**

- A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
  - 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again, adding only enough water to produce a damp, unworkable mix that retains its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- B. Colored Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.
  - 1. Mortar Pigments: Where mortar pigments are indicated, do not add pigment exceeding 10 percent by weight of the cementitious or binder materials, except for carbon black which is limited to 2 percent, unless otherwise demonstrated by a satisfactory history of performance.
- C. Do not use admixtures in mortar unless otherwise indicated.
- D. Mixes: Mix mortar materials in the following proportions:
  - 1. Pointing Mortar by Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to portland cement and lime masonry cement or mortar cement.

## **PART 3 - EXECUTION**

### **3.1 PROTECTION**

- A. Prevent mortar from staining face of surrounding masonry and other surfaces.
  - 1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
  - 2. Keep wall area wet below pointing work to discourage mortar from adhering.
  - 3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.
- B. Remove gutters and downspouts and associated hardware adjacent to masonry and store during masonry repointing. Reinstall when repointing is complete.

1. Provide temporary rain drainage during work to direct water away from building.

### **3.2 MASONRY REPOINTING, GENERAL**

- A. Appearance Standard: Repointed surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.

### **3.3 REPOINTING**

- A. Rake out and repoint joints to the following extent:
  1. All joints in areas indicated.
  2. Joints indicated as sealant-filled joints.
  3. Joints at locations of the following defects:
    - a. Holes and missing mortar.
    - b. Cracks that can be penetrated 1/4 inch or more by a knife blade 0.027 inch thick.
    - c. Cracks 1/8 inch or more in width and of any depth.
    - d. Hollow-sounding joints when tapped by metal object.
    - e. Eroded surfaces 1/4 inch or more deep.
    - f. Deterioration to point that mortar can be easily removed by hand, without tools.
    - g. Joints filled with substances other than mortar.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved mockup:
  1. Remove mortar from joints to depth of joint width plus 1/8 inch and not less than that required to expose sound, unweathered mortar. Do not remove unsound mortar more than 2 inches deep; consult Architect for direction.
  2. Remove mortar from brick and other masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
  3. Do not spall edges of brick or other masonry units or widen joints. Replace or patch damaged brick or other masonry units as directed by Architect.
- D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- E. Pointing with Mortar:
  1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
  2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer, and allow it to become thumbprint hard before applying next layer.
  3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
  4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.

5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
  6. Hairline cracking within mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.
- F. Pointing with Sealant: Comply with Section 079200 "Joint Sealants." and as follows:
1. After raking out, keep joints dry and free of mortar and debris.
  2. Clean and prepare joint surfaces. Prime joint surfaces unless sealant manufacturer recommends against priming. Do not allow primer to spill or migrate onto adjoining surfaces.
  3. Fill sealant joints with specified joint sealant.
    - a. Install cylindrical sealant backing beneath the sealant. Where space is insufficient for cylindrical sealant backing, install bond-breaker tape.
    - b. Install sealant using only proven installation techniques that ensure that sealant is deposited in a uniform, continuous ribbon, without gaps or air pockets, and with complete wetting of the joint bond surfaces equally on both sides. Fill joint flush with surrounding masonry and matching the contour of adjoining mortar joints.
    - c. Install sealant as recommended in writing by sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead:
      - 1) Fill joints to a depth equal to joint width, but not more than 1/2 inch deep or less than 1/4 inch deep.
    - d. Tool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant from surfaces adjacent to joint.
    - e. Sanded Joints: Immediately after first tooling, apply ground-mortar aggregate to sealant, gently pushing aggregate into the surface of sealant. Lightly retool sealant to form smooth, uniform beads, slightly concave. Remove excess sealant and aggregate from surfaces adjacent to joint.
    - f. Do not allow sealant to overflow or spill onto adjoining surfaces, or to migrate into the voids of adjoining surfaces, particularly rough textures. Remove excess and spillage of sealant promptly as the work progresses. Clean adjoining surfaces by the means necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes, as demonstrated in an approved mockup.
- G. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

### **3.4 FINAL CLEANING**

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.
  1. Do not use metal scrapers or brushes.
  2. Do not use acidic or alkaline cleaners.
- B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.
- C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- D. Remove masking materials, leaving no residues that could trap dirt.

**3.5 FIELD QUALITY CONTROL**

- A. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.
- B. Notify Architect's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

**END OF SECTION 040120.64**

**SECTION 042200**

**CONCRETE UNIT MASONRY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Concrete masonry units.
  - 2. Mortar and grout.
  - 3. Steel reinforcing bars.
  - 4. Masonry-joint reinforcement.
  - 5. Embedded flashing.
  - 6. Miscellaneous masonry accessories.
  - 7. Masonry-cell fill.
- B. Products Installed but not Furnished under This Section:
- C. Cast-stone trim in concrete unit masonry.
- D. Related Requirements:
  - 1. Section 051200 "Structural Steel for installing anchor sections of adjustable masonry anchors for connecting to structural steel frame.
  - 2. Section 071900 "Water Repellents" for water repellents applied to unit masonry assemblies.
  - 3. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.

**1.3 DEFINITIONS**

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
  - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
  - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. Show elevations of reinforced walls.
  - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For testing agency.

- B. Material Certificates: For each type and size of the following:
  - 1. Masonry units.
    - a. Include data on material properties.
    - b. For masonry units include data and calculations establishing average net-area compressive strength of units.
  - 2. Integral water repellent used in CMUs.
  - 3. Cementitious materials. Include name of manufacturer, brand name, and type.
  - 4. Mortar admixtures.
  - 5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
  - 6. Grout mixes. Include description of type and proportions of ingredients.
  - 7. Reinforcing bars.
  - 8. Joint reinforcement.
  - 9. Anchors, ties, and metal accessories.
- C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
  - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
  - 2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.
- E. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

#### **1.6 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. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

## 1.7 FIELD 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 of walls, 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 three 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 base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  - 2. Protect sills, ledges, and projections from mortar droppings.
  - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- 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 TMS 602/ACI 530.1/ASCE 6.
  - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

### 2.2 PERFORMANCE REQUIREMENTS

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



### **2.3 UNIT MASONRY, GENERAL**

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work and will be within 20 feet vertically and horizontally of a walking surface.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
  - 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

### **2.4 CONCRETE MASONRY UNITS**

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  - 2. Provide square-edged] units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C90.
  - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2,000 psi
  - 2. Density Classification: Normal weight unless otherwise indicated.
  - 3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.

### **2.5 CONCRETE AND MASONRY LINTELS**

- A. General: Provide one of the following:
- B. Concrete Lintels: ASTM C1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than that of CMUs.
- C. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Section 032000 "Concrete Reinforcing," and with reinforcing bars indicated.
- D. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

### **2.6 MORTAR AND GROUT MATERIALS**

- A. Portland Cement: ASTM C150/C150M, 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.
  - 1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.

- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C91/C91M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Essroc.
    - b. Holcim (US) Inc.
    - c. Lafarge North America Inc.
- E. Mortar Cement: ASTM C1329/C1329M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Lafarge North America Inc.
- F. Aggregate for Mortar: ASTM C144.
  - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
  - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
  - 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
  - 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- G. Aggregate for Grout: ASTM C404.
- H. Epoxy Pointing Mortar: ASTM C395, epoxy-resin-based material formulated for use as pointing mortar for glazed or pre-faced masonry units (and approved for such use by manufacturer of units); in color indicated or, if not otherwise indicated, as selected by Architect from manufacturer's colors.
- I. Water: Potable.

## 2.7 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Wire-Bond.
- C. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A951/A951M.

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1. Interior Walls: Hot-dip galvanized carbon steel.
2. Exterior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side Rods: 0.156-inch diameter.
4. Wire Size for Cross Rods: 0.156-inch diameter.
5. Spacing of Cross Rods: Not more than 16 inches o.c.
6. Provide in lengths of not less than 10 feet.

## 2.8 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least 1-1/2 inches into masonry but with at least a 5/8-inch cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
  1. Mill-Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A641/A641M, Class 1 coating.
  2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
  3. Stainless Steel Wire: ASTM A580/A580M, Type 304.
  4. Galvanized-Steel Sheet: ASTM A653/A653M, Commercial Steel, G60 zinc coating.
  5. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
  6. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.
  7. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
  1. Anchor Section for Welding to Steel Frame: Crimped 1/4-inch-diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls unless otherwise indicated.
  2. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls unless otherwise indicated.
- D. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
  1. Connector Section: Dovetail tabs for inserting into dovetail slots in concrete and attached to tie section; formed from 0.060-inch-thick steel sheet, galvanized after fabrication
    - a. 0.064-inch-thick, galvanized-steel sheet may be used at interior walls unless otherwise indicated.
  2. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls unless otherwise indicated.
  3. Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from 0.060-inch-thick steel sheet, galvanized after fabrication

- a. 0.064-inch- thick, galvanized sheet may be used at interior walls unless otherwise indicated.
- E. Partition Top Anchors: 0.105-inch-thick metal plate with a 3/8-inch-diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube. Fabricate from steel, hot-dip galvanized after fabrication.
- F. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches or with cross pins unless otherwise indicated.
- 1. Corrosion Protection: Hot-dip galvanized to comply with ASTM A 153/A153M .

## **2.9 EMBEDDED FLASHING MATERIALS**

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
  - 1. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
  - 2. Fabricate through-wall flashing with drip edge unless otherwise indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
  - 3. Fabricate through-wall flashing with sealant stop unless otherwise indicated. Fabricate by bending metal back on itself 3/4 inch at exterior face of wall and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
  - 4. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy.
    - a. Monolithic Sheet: Elastomeric thermoplastic flashing, 0.040 inch thick.
    - b. Self-Adhesive Sheet: Elastomeric thermoplastic flashing, 0.025 inch thick, with a 0.015-inch-thick coating of adhesive.
  - c. Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.
- B. Application: Unless otherwise indicated, use the following:
  - 1. Where flashing is indicated to receive counterflashing, use metal flashing.
  - 2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
  - 3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing with a drip edge
  - 4. Where flashing is fully concealed, use metal flashing
- C. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."
- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

## 2.10 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.
- B. Preformed Control-Joint Gaskets: Made from [styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805] [or] [PVC, complying with ASTM D2287, Type PVC-65406] and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

## 2.11 MASONRY-CELL FILL

- A. Acceptable Manufacturers
  - a. Manufacturers of Foamed-In-Place Masonry Insulation: Subject to compliance with requirements, provide products from the following:
    - 1. "Core-Fill 500TM"; Tailored Chemical Products, P.O. Box 4186, Hickory, N.C. 28603, (800) 627-1687
    - 2. No substitutions allowed.
- B. Insulating Materials
  - 1. General: Provide insulating materials which comply with requirements indicated for materials, compliance with referenced standards, and other characteristics.
  - 2. Foamed-In-Place Masonry Insulation: Two component thermal insulation produced by combining a plastic resin and catalyst foaming agent surfactant which, when properly ratioed and mixed, together with compressed air produce a cold-setting foam insulation in the hollow cores of hollow unit masonry walls.
    - a. Surface Burning Characteristics: Maximum flame spread, smoke developed and fuel contributed of 0, 5 and 0 respectively.
    - b. Combustion Characteristics: Must be noncombustible, Class A building material.
    - c. Thermal Values: "R" Value of 4.91/inch @ 32 degrees F mean; ASTM C-177.
  - d. Sound Abatement: Minimum Sound Transmission Class ("STC") rating of 53 and a minimum Outdoor Indoor Transmission Class ("OITC") rating of 44 for 8" wall assembly (ASTM E 90-90).
- C. Lightweight-Aggregate Fill: ASTM C331/C331M.

## 2.12 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
1. Do not use calcium chloride in mortar or grout.
  2. Use portland cement-lime, masonry cement, or mortar cement mortar unless otherwise indicated.
  3. For exterior masonry, use portland cement-lime, [masonry cement, or [mortar cement mortar.
  4. For reinforced masonry, use portland cement-lime, masonry cement, or mortar cement mortar.
  5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Mortar for Unit Masonry: Comply with ASTM C270, Proportion 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 M.
  2. For reinforced masonry, use Type S..
  3. For mortar parge coats, use Type S or Type N.
  4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
  5. For interior nonload-bearing partitions, Type O may be used instead of Type N.
- C. Grout for Unit Masonry: Comply with ASTM C476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
  2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
  3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143/C143M.
- D. Epoxy Pointing Mortar: Mix epoxy pointing mortar to comply with mortar manufacturer's written instructions.
1. Application: Use epoxy pointing mortar for exposed mortar joints with pre-faced CMUs.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
  2. Verify that foundations are within tolerances specified.
  3. Verify that reinforcing dowels are properly placed.
  4. Verify that substrates are free of substances that would impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- C. 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.

### 3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
  2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
  3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:
1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
  2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
  3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
  4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
  5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
  6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
  7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.
- C. Joints:
1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
  2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
  3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
  4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

### 3.4 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. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in [running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by stepping 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.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. 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.
- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build nonload-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. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
  - 3. Wedge nonload-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.
  - 4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 078443 "Joint Firestopping."

### 3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
  - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
  - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
  - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
  - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.



- B. Lay solid CMUs 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.
- C. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
  - 1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
  - 2. Wet joint surfaces thoroughly before applying mortar.
  - 3. Rake out mortar joints for pointing with sealant.
- D. Rake out mortar joints at pre-faced CMUs to a uniform depth of 1/4 inch and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- F. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
- G. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

### **3.6 MASONRY-CELL FILL**

- A. Pour foamed in place fill into cavities to fill void spaces. Maintain inspection ports to show presence of fill at extremities of each pour area. Close the ports after filling has been confirmed. Limit the fall of fill to one story high, but not more than 20 feet.

### **3.7 MASONRY-JOINT REINFORCEMENT**

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
  - 1. Space reinforcement not more than 16 inches o.c.
  - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
  - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### **3.8 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE**

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:
  - 1. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.

2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
3. Space anchors as indicated, but not more than 24 inches o.c. vertically and 36 inches o.c. horizontally.

### **3.9 CONTROL AND EXPANSION JOINTS**

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
  1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
  2. Install preformed control-joint gaskets designed to fit standard sash block.
  3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.
  4. Install temporary foam-plastic filler in head joints, and remove filler when unit masonry is complete for application of sealant.

### **3.10 LINTELS**

- A. Provide concrete or 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.
- B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

### **3.11 FLASHING**

- A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.
- B. Install flashing as follows unless otherwise indicated:
  1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
  2. At lintels, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
- C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

### **3.12 REINFORCED UNIT MASONRY**

- 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 loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- 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 TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
  2. Limit height of vertical grout pours to not more than 60 inches .

### **3.13 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.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  2. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
  3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
  4. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

### **3.14 MASONRY WASTE DISPOSAL**

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
1. Crush masonry waste to less than 4 inches in each dimension.
  2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste.
  3. Do not dispose of masonry waste as fill within 18 inches of finished grade.

- C. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- D. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

**END OF SECTION 042200**

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**SECTION 042200.13**

**ARCHITECTURAL STONE VENEER**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Architectural Stone Veneer (RockCast's Architectural Masonry Veneer Series).

**ATTENDED SECTIONS**

- A. Section 042200 –Concrete Unit Masonry.
- B. Section 042613 – Masonry Veneer.
- C. Section 047200 – Cast Stone Masonry.
- D. Section 079200 – Joint Sealants.

**1.3 REFERENCES**

- A. ASTM A 615/A 615M - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- B. ASTM A767/A767M - Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- C. ASTM C 33 - Concrete Aggregates.
- D. ASTM C 90 - Loadbearing Concrete Masonry Units.
- E. ASTM C 140 - Sampling and Testing Concrete Masonry Units and Related Units.
- F. ASTM C 150 - Portland Cement.
- G. ASTM C 270 - Mortar for Unit Masonry.
- H. ASTM C 426 - Linear Drying Shrinkage of Concrete Masonry Units.
- I. ASTM C 494 - Chemical Admixtures for Concrete.
- J. ASTM C 666 - Resistance of Concrete to Rapid Freezing and Thawing.
- K. ASTM C 979 - Pigments for Integrally Colored Concrete.
- L. ACI 530 "Building Code Requirements for Masonry Structures"

#### **1.4 DEFINITIONS**

- A. Architectural Stone Veneer (RockCast's Architectural Masonry Veneer Series): An architectural stone unit manufactured to copy fine grain texture and color of natural cut stone. Meets ASTM C 90 requirements.
- B. Dry Cast Concrete Products: Manufactured from zero-slump concrete.
- C. Machine Casting Method: Vibratory compaction by machine of earth-moist, zero-slump concrete against rigid mold until it is densely compacted.

#### **1.5 SUBMITTALS**

- A. Comply with Section 013300 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data.
- C. Shop Drawings: Submit manufacturer's shop drawings, including profiles, cross sections, modular unit lengths, reinforcement (if required), exposed faces, anchors and anchoring method recommendations (if required), and annotation of architectural stone units, types and location.
- D. Samples: Submit pieces of manufacturer's architectural stone units that represent general range of texture and color proposed to be furnished for project.
- E. Test Results:
  - 1. Submit manufacturer's test results from architectural stone units previously made by manufacturer using materials from same sources proposed for use in project.
- F. Manufacturer's Project References: Submit list of projects similar in scope, including project name and location, name of architect, and type and quantity of architectural stone units installed.
- G. Warranty: Submit manufacturer's standard warranty.

#### **1.6 QUALITY ASSURANCE**

- A. Manufacturer Qualifications:
  - 1. Sufficient plant facilities to provide quality, shapes, quantities, and sizes of architectural stone units required without delaying progress of the Work.
  - 2. Minimum of 15 years experience in producing masonry units.
  - 3. Custom Cast Stone Series and Architectural Masonry Veneer Series are to be manufactured from a similar mix design to match color and texture.
  - 4. Manufacturer shall have an internal Quality Assurance Testing Program with certified laboratory technician(s).

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery:
  - 1. Deliver architectural stone units secured to shipping pallets and protected from damage and discoloration.
  - 2. Provide itemized shipping list.

3. Number each piece individually, as required, to match shop drawings and schedules.

B. Storage:

1. Store architectural stone units and installation materials in accordance with manufacturer's instructions.
2. Store architectural stone units on pallets with nonstaining, waterproof covers.
3. Do not double stack pallets.
4. Ventilate units under covers to prevent condensation.
5. Prevent contact with dirt and splashing.

C. Handling:

1. Protect architectural stone units, including corners and edges, during storage, handling, and installation to prevent chipping, cracking, staining, or other damage.
2. Handle long units at center and both ends simultaneously to prevent cracking.
3. Do not use pry bars or other equipment in a manner that could damage units.

## 1.8 SCHEDULING

A. Schedule and coordinate production and delivery of architectural stone units with unit masonry work.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

A. Reading Rock, Inc., 4600 Devitt Drive, Cincinnati, Ohio 45246  
Phone (800) 482-6466 Fax (513) 874-2361  
Web Site [www.readingrock.com](http://www.readingrock.com) e-mail [info@readingrock.com](mailto:info@readingrock.com)

### 2.2 APPROVED DISTRIBUTOR

### 2.3 ARCHITECTURAL STONE VENEER (ARCHITECTURAL MASONRY VENEER SERIES)

A. Architectural Stone Veneer: RockCast's Architectural Masonry Veneer Series.

B. Compliance: ASTM C 90.

C. Casting Method: Machine.

D. Texture: Smooth

E. Color: Color to be selected by Architect from manufacturers available colors, to determine match to existing building.

F. Units: ST-1648.

G. Test Results:

1. Compressive Strength, ASTM C 140: Typical RockCast's Architectural Masonry Veneer Series compressive strength range is 3,000 - 5,000 psi at 28 days.
2. Absorption, ASTM C 140: Typically less than 6 percent at 28 days.
3. Linear Shrinkage, ASTM C 426: Maximum .065 percent.
4. Density, ASTM C 140: Typically greater than 120 pounds per cubic foot.

H. Curing: Cure in enclosed chamber at 95 percent relative humidity and 95 to 120 degrees F for 12 to 18 hours and yard cure for 350 degree-days.



## **2.4 ARCHITECTURAL STONE VENEER MATERIALS**

- A. Portland Cement: ASTM C 150, Type I or III. White and/or gray as required to match specified color.
- B. Coarse Aggregates: ASTM C 33, except for gradation. Granite, quartz, or limestone.
- C. Fine Aggregates: ASTM C 33, except for gradation. Manufactured or natural sands.
- D. Pigments: ASTM C 979, except do not use carbon black pigments. Inorganic iron oxide pigments.
- E. Water Reducing, Retarding, and Accelerating Admixtures: ASTM C 494.
- F. Other admixtures: integral water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
- G. Water: Potable.

## **2.5 TEXTURE AND COLOR**

- A. General: Match texture and color of full-size sample on file with Architect.
- B. Texture of Surfaces Exposed to View:
  - 1. Fine-grained texture similar to natural stone and architectural stone units.
  - 2. Approximately equal to approved sample when viewed in direct daylight at 10 feet.
- C. Surface Air Voids:
  - 1. Size: Maximum 1/32 inch.
  - 2. Density: Less than 3 occurrences per any 1 square inch.
  - 3. Viewing Conditions: Not obvious under direct daylight at 10 feet.
- D. Finish:
  - 1. Minor chipping resulting from shipping and delivery shall not be grounds for rejection of units.
  - 2. Minor chips shall not be obvious under direct daylight at 20 feet, as determined by Architect.
  - 3. The occurrence of crazing or efflorescence shall not constitute a cause for rejection.
- E. Color Variation:
  - 1. Viewing Conditions: Compare in direct daylight at 10 feet, between units of similar age, subjected to similar weathering conditions.

## **2.6 MORTAR**

- A. Mortar: ASTM C 270, Type N

## **2.7 ACCESSORIES**

- A. Anchors: Non-corrosive type, sized for conditions. Hot-dip galvanized steel.
- B. Sealant: As specified in Section 079000.
- C. Cleaner: Prosoco Sure Klean Custom Masonry Cleaner, Prosoco Sure Klean 600 Detergent Prosoco Sure Klean Vana Trol, Prosoco Light Duty Cleaner \* or EaCo Chem NMD-80. If EaCo Chem NMD-80 is used follow their application process.

\* Note: Aggressive cleaners may remove too much of the concrete surface paste making some of the color to appear to be "stripped." Therefore, on darker units a less aggressive cleaner such as Proso's Light Duty Cleaner should be used to maintain color.

## **2.8 FABRICATION**

- A. Shapes: As indicated on drawings.

## **2.9 TOLERANCES**

- A. General: Manufacture architectural stone units within tolerances in accordance with ASTM C 90, unless otherwise specified.
- B. Length, height, width: Do not deviate by more than plus or minus 1/8 inch from approved dimensions. These requirements do not apply to split faced units.

## **2.10 PRODUCTION QUALITY CONTROL**

- A. Mix Designs: Test new and existing mix designs for applicable compressive strength and absorption compliance before manufacturing architectural stone units.
- B. Plant Production Testing: Tests to be conducted by certified laboratory testing technicians. Test from specimens selected at random from plant production in accordance with ASTM C 140.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Examine construction to receive architectural stone units. Notify Architect if construction is not acceptable. Do not begin installation until unacceptable conditions have been corrected.
- B. Examine architectural stone units before installation. Do not install unacceptable units.
  - 1. Waste: For various reasons due to shipping, handling or the manufacturing process, a small amount of RockCast's Architectural Masonry Veneer Series units may have blemishes or chips and should be used for field cutting for maximum material utilization. When ordering material, please allow for waste (approximately 2 to 3%) and saw cutting in your estimate.
  - 2. All RockCast products are shipped on a pallet and have one unfinished side. Textured units are to be set with the texture face forward and smooth units are stacked "face up" on the pallet.
  - 3. RockCast's Architectural Masonry Veneer Series units have an unfinished back, one finished face, and approximately 40 to 60% of the units have one smooth finished end. Architectural machine made split and chiseled faced units can be ordered with a matching finished end upon request.

### **3.2 INSTALLATION**

- A. Install units in conjunction with masonry, as specified in Section 042200 and Section 042613 .
- B. Pull units from multiple cubes during installation to minimize variation in color and help with natural blending.

- C. Cut units using motor-driven masonry saws. Finished ends should be turned to the visible side and the saw cut turned to the inside of the mortar joint to hide exposed aggregates and saw marks.
- D. Do not use pry bars or other equipment in a manner that could damage units.
- E. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
- F. Use Type N mortar (ASTM C 270), unless specified otherwise.
- G. Per ACI 530.1, it is not necessary, nor recommended, to wet the units prior to installation.
- H. Set units in full bed of mortar, unless otherwise indicated on the drawings.
- I. Fill vertical joints with mortar.
- J. Make joints 3/8 inch, unless otherwise indicated on the drawings.
- K. Tuck point mortar joints to slight concave profile (unless specified otherwise).
- L. Remove excess mortar immediately.
- M. Remove mortar fins and smears before tooling joints.
- N. Cover wainscot for protection with plastic, felt paper or other approved products.
- O. Cover freshly installed masonry products as required to assist with the curing process.
- P. Sealant Joints:
  - 1. As specified in Section 079000.
  - 2. Prime ends of units, insert properly sized backing rod, and install sealant.
  - 3. Provide sealant joints at following locations:
    - a. Joints at relieving angles.
    - b. Control and expansion joints.

### **3.3 TOLERANCES**

- A. Installation Tolerances:
  - 1. Variation from Plumb: Do not exceed 1/8 inch in 5 feet or 1/4 inch in 20 feet or more.
  - 2. Variation from Level: Do not exceed 1/8 inch in 5 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
  - 3. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch or 1/4 of nominal joint width, whichever is greater.
  - 4. Variation in Plane Between Adjacent Surfaces: Do not exceed 1/8-inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

### **3.4 CLEANING**

- A. Clean exposed units after mortar is thoroughly set and cured.
- B. Perform test of cleaner on small area of 4' x 4' on each type and color and receive approval by Architect before full cleaning. Let test area dry 4 to 5 days before inspection. Keep test area for future comparison.

- C. Clean units by wetting down the surface first, before using the specified cleaner (as specified in Section 2.7.C). Brush on cleaner, let dwell for 2 to 3 minutes. Reapply cleaner, scrub surface with masonry brush and rinse off thoroughly. Areas with heavy soiling use a wood block or non-metallic scraper.
- D. Apply cleaner to units in accordance with cleaner manufacturer's instructions.
- E. Do **not** use the following to clean units:
  - 1. Muriatic acid.
  - 2. Power washing.
  - 3. Sandblasting.
  - 4. Harsh cleaning materials or methods that would damage or discolor surfaces.

### **3.5 REPAIR**

- A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.
- B. Repair with touchup materials provided by manufacturer in accordance with manufacturer's instructions.
- C. Repair methods and results to be approved by Architect.

### **3.6 INSPECTION AND ACCEPTANCE**

- A. Inspect completed installation in accordance with ACI 530 requirements.

### **3.7 WATER REPELLANT**

- A. Sealer: Prosoco Sure Klean Weather Seal Siloxane WB or PD or Hydrozo Enviroseal 7 according to manufacturer's recommendations. Apply water repellent for weatherproofing in accordance with water repellent manufacturer's instructions.
- B. Apply water repellent after installation, cleaning, repair, inspection, and acceptance of units are completed.

### **3.8 PROTECTION**

- A. Protect installed units from splashing, stains, mortar, and other damage.

**END OF SECTION 042200.13**

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**SECTION 042613**

**MASONRY VENEER**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Clay face brick.
  - 2. Mortar.
  - 3. Ties and anchors.
  - 4. Embedded flashing.
  - 5. Miscellaneous masonry accessories.
- B. Products Installed but not Furnished under This Section:
  - 1. Cast-stone trim in masonry veneer.
  - 2. Steel lintels in masonry veneer.
  - 3. Steel shelf angles for supporting masonry veneer.
- C. Related Requirements:
  - 1. Section 033000 "Cast in Place Concrete" for installing dovetail slots for masonry-veneer anchors.
  - 2. Section 076200 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.

**1.3 DEFINITIONS**

- A. CMU(s): Concrete masonry unit(s).

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
  - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
  - 2. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
- C. Samples for Initial Selection:
  - 1. Clay face brick, in the form of straps of five or more bricks.
  - 2. Colored mortar.
  - 3. Weep holes/vents.
- D. Samples for Verification: For each type and color of the following:
  - 1. Clay face brick, in the form of straps of five or more bricks.

2. Pigmented and colored-aggregate mortar. Make Samples using same sand and mortar ingredients to be used on Project.
3. Weep holes.
4. Accessories embedded in masonry.

#### **1.5 INFORMATIONAL SUBMITTALS**

- A. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, model numbers, lot numbers, batch numbers, source of supply, and other information as required to identify materials used. Include mix proportions for mortar and grout and source of aggregates.
1. Submittal is for information only. Receipt of list does not constitute approval of deviations from the Contract Documents unless such deviations are specifically brought to the attention of Architect and approved in writing.
- B. Material Certificates: For each type and size of the following:
1. Masonry units.
    - a. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
    - b. For exposed brick, include test report for efflorescence according to ASTM C67.
  2. Cementitious materials. Include name of manufacturer, brand name, and type.
  3. Mortar admixtures.
  4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
  5. Anchors, ties, and metal accessories.
- C. Mix Designs: For each type of mortar. Include description of type and proportions of ingredients.
1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
- D. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.

#### **1.6 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. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

## 1.7 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of veneer, 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 face of veneer, and hold cover securely in place.
- B. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry. Immediately remove grout, mortar, and soil that come in contact with masonry.
  - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  - 2. Protect sills, ledges, and projections from mortar droppings.
  - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
  - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

### 2.2 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects will be exposed in the completed Work and will be within 20 feet vertically and horizontally of a walking surface.



### 2.3 BRICK

- A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
  2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
  3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
  4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Clay Face Brick: Facing brick complying with ASTM C216.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Meridian Brick and Masonry company.
    - b. Cherokee Brick.
    - c. Taylor Clay Products.
  2. Grade: SW
  3. Type: FBXFBS FBA.
  4. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested according to ASTM C7.
  5. Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated "not effloresced."
  6. Surface Coating: Brick with colors or textures produced by application of coatings shall withstand 50 cycles of freezing and thawing according to ASTM C67 with no observable difference in the applied finish when viewed from 10 feet or shall have a history of successful use in Project's area.
  7. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 8 inches long. Match existing brick size and color.
  8. Application: Use where brick is exposed unless otherwise indicated.
  9. Where shown to "match existing," provide clay face brick matching color range, texture, and size of existing adjacent brickwork.
  10. Color and Texture: As selected by Architect.

### 2.4 MORTAR MATERIALS

- A. Portland Cement: ASTM C150/C150M, 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.
1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C91/C91M.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Essroc.
  - b. Holcim (US) Inc.
  - c. Lafarge North America Inc.

E. Mortar Cement: ASTM C1329/C1329M.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - a. Lafarge North America Inc.

F. Aggregate for Mortar: ASTM C144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. White-Mortar Aggregates: Natural white sand or crushed white stone.
4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Euclid Chemical Company (The); an RPM company.
  - b. GCP Applied Technologies Inc.

H. Water: Potable.

**2.5 TIES AND ANCHORS**

A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Mill-Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A641/A641M, Class 1 coating.
2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
3. Galvanized-Steel Sheet: ASTM A653/A653M, Commercial Steel, G60 zinc coating.
4. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.

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- C. Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from 0.030-inch-thick, steel sheet, galvanized after fabrication].
- D. Adjustable Anchors for Connecting to Structural Steel Framing: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
  - 1. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, [hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls unless otherwise indicated.
- E. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
  - 1. Tie Section: Triangular-shaped wire tie made from 0.187-inch-diameter, hot-dip galvanized steel wire. Mill-galvanized wire may be used at interior walls unless otherwise indicated.
  - 2. Corrugated-Metal Ties: Metal strips not less than 7/8 inch wide with corrugations having a wavelength of 0.3 to 0.5 inch and an amplitude of 0.06 to 0.10 inch made from 0.060-inch-thick steel sheet, galvanized after fabrication with dovetail tabs for inserting into dovetail slots in concrete.
    - a. 0.064-inch-thick, galvanized sheet may be used at interior walls unless otherwise indicated.
- F. Adjustable Masonry-Veneer Anchors:
  - 1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.
  - 2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.075-inch-thick steel sheet, galvanized after fabrication.
  - 3. Fabricate wire ties from 0.187-inch-diameter, hot-dip galvanized steel wire unless otherwise indicated.
  - 4. Fabricate wire connector sections from 0.187-inch-diameter, hot-dip galvanized, carbon steel wire.
  - 5. Contractor's Option: Unless otherwise indicated, provide any of the adjustable masonry-veneer anchors specified.
  - 6. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with a projecting vertical tab having a slotted hole for inserting wire tie.
  - 7. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with projecting tabs having holes for inserting vertical legs of wire tie formed to fit anchor section.
  - 8. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a sheet metal anchor section, 1-1/4 inches wide by 9 inches long, with screw holes top and bottom and with raised rib-stiffened strap, 5/8 inch wide by 5-1/2 inches long, stamped into center to provide a slot between strap and base for inserting wire tie.
  - 9. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a sheet metal anchor section, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom and with raised rib-stiffened strap, 5/8 inch wide by 3-5/8 inches long, stamped into center to provide a slot between strap and base for inserting wire tie.

10. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a gasketed sheet metal anchor section, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, 5/8 inch wide by 6 inches long, stamped into center to provide a slot between strap and base for inserting wire tie. Self-adhering, modified bituminous gasket fits behind anchor plate and extends beyond pronged legs.
11. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a corrosion-resistant, self-drilling, eye-screw designed to receive wire tie. Eye-screw has spacer that seats directly against framing and is same thickness as sheathing and has gasketed washer head that covers hole in sheathing.
12. Seismic Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with projecting tabs having holes for inserting vertical legs of wire tie. Wire tie has sheet metal clip welded to it with integral tabs designed to engage continuous wire.
13. Seismic Masonry-Veneer Anchors: Connector section and a gasketed sheet metal anchor section, 1-1/4 inches wide by 6 inches long, with screw holes top and bottom; top and bottom ends bent to form pronged legs of length to match thickness of insulation or sheathing; and raised rib-stiffened strap, 5/8 inch wide by 6 inches long, stamped into center to provide a slot between strap and base for inserting connector section. Self-adhering, modified bituminous gasket fits behind anchor plate and extends beyond pronged legs. Connector section consists of a triangular wire tie and rigid PVC extrusion with snap-in grooves for inserting continuous wire.
14. Polymer-Coated, Steel Drill Screws for Steel Studs: ASTM C954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads, and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours according to ASTM B117.
15. Stainless Steel Drill Screws for Steel Studs: ASTM C954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads; either made from Type 410 stainless steel or made with a carbon-steel drill point and 300 Series stainless steel shank.

## **2.6 EMBEDDED FLASHING MATERIALS**

- A. Metal Flashing: Provide metal flashing complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
  1. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.016 inch thick.
  2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
  3. Fabricate through-wall flashing with snap lock receiver on exterior face where indicated to receive counterflashing.
  4. Fabricate through-wall flashing with drip edge where unless otherwise indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
  5. Fabricate through-wall flashing with sealant stop where unless otherwise indicated. Fabricate by bending metal back on itself 3/4 inch at exterior face of wall and down into joint 1/4 inch to form a stop for retaining sealant backer rod.

6. Fabricate metal drip edges and sealant stops for ribbed metal flashing from plain metal flashing of same metal as ribbed flashing and extending at least 3 inches into wall with hemmed inner edge to receive ribbed flashing and form a hooked seam. Form hem on upper surface of metal so that completed seam sheds water.
  7. Fabricate metal drip edges from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
  8. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch and down into joint 1/4 inch to form a stop for retaining sealant backer rod.
  9. Solder metal items at corners.
    - a. Accessories: Provide preformed corners, end dams, other special shapes, and seaming materials produced by flashing manufacturer.
- B. Application: Unless otherwise indicated, use the following:
1. Where flashing is indicated to receive counterflashing, use metal flashing.
  2. Where flashing is indicated to be turned down at or beyond the wall face, use metal flashing.
  3. Where flashing is partly exposed and is indicated to terminate at the wall face, use metal flashing [with a drip edge] [with a sealant stop] [or flexible flashing with a metal drip edge] [or elastomeric thermoplastic flashing with a drip edge] [or flexible flashing with a metal sealant stop].
  4. Where flashing is fully concealed, use metal flashing.
- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

## 2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene, urethane or PVC.
- B. Weep/Vent Products: Use one of the following unless otherwise indicated:
1. Wicking Material: Absorbent rope, made from cotton or UV-resistant synthetic fiber, 1/4 to 3/8 inch in diameter, in length required to produce 2-inch exposure on exterior and 18 inches in cavity. Use only for weeps.
  2. Round Plastic Weep/Vent Tubing: Medium-density polyethylene, 3/8-inch OD by 4 inches long.
  3. Rectangular Plastic Weep/Vent Tubing: Clear butyrate, 3/8 by 1-1/2 by 3-1/2 inches long.
  4. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
  5. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch less than depth of outer wythe; in color selected from manufacturer's standard.
- C. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
1. Configuration: Provide one of the following:

- a. Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.
- b. Strips, not less than 3/4 inch thick and 10 inches high, with dimpled surface designed to catch mortar droppings and prevent weep holes from clogging with mortar.
- c. Sheets or strips, full depth of cavity and installed to full height of cavity.
- d. Sheets or strips not less than 3/4 inch thick and installed to full height of cavity with additional strips 4 inches high at weep holes and thick enough to fill entire depth of cavity and prevent weep holes from clogging with mortar.

## 2.8 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
    - b. PROSOCO, Inc.

## 2.9 MORTAR MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  1. Do not use calcium chloride in mortar or grout.
  2. Use portland cement-lime, masonry cement or mortar cement mortar unless otherwise indicated.
  3. For exterior masonry, use portland cement-lime, masonry cement, or mortar cement mortar.
  4. For reinforced masonry, use portland cement-lime, masonry cement, or mortar cement mortar.
  5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. 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 C270, Proportion Specification. Use Type N unless another type is indicated.
  1. For masonry below grade or in contact with earth, use Type M.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION, GENERAL**

- A. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- B. 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.
- C. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- D. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

### **3.3 TOLERANCES**

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2 inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2 inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch except due to warpage of masonry units within tolerances specified for warpage of units.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.

3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

### **3.4 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. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in bond pattern indicated on Drawings do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Stopping and Resuming Work: Stop work by stepping 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.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.

### **3.5 MORTAR BEDDING AND JOINTING**

- A. Lay hollow brick with face shells fully bedded in mortar and with head joints of depth equal to bed joints. At starting course, fully bed entire units, including area under cells.
  1. At anchors and ties, fully bed units and fill cells with mortar as needed to fully embed anchors and ties in mortar.
- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

### **3.6 ANCHORED MASONRY VENEERS**

- A. Anchor masonry veneers to wall framing and concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
  1. Fasten screw-attached anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
  2. Embed connector sections and continuous wire in masonry joints.
  3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
  4. Space anchors as indicated, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.



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- B. Provide not less than 1-1/2 inches of airspace between back of masonry veneer and face of sheathing.
  - 1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.

### **3.7 EXPANSION JOINTS**

- A. General: Install expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form expansion joints as follows:
  - 1. Build flanges of metal expansion strips into masonry. Lap each joint 4 inches in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints if any.
  - 2. Build flanges of factory-fabricated, expansion-joint units into masonry.
  - 3. Build in compressible joint fillers where indicated.
  - 4. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Section 079200 "Joint Sealants."

### **3.8 LINTELS**

- A. Install steel lintels where indicated.
- B. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

### **3.9 FLASHING, WEEP HOLES, AND VENTS**

- A. Install flashing as follows unless otherwise indicated:
  - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape.
  - 2. Extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 8 inches; with upper edge tucked under water-resistive barrier lapping at least 4 inches. Fasten upper edge of flexible flashing to sheathing through termination bar.
  - 3. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
  - 4. Interlock end joints of ribbed sheet metal flashing by overlapping ribs not less than 1-1/2 inches or as recommended by flashing manufacturer, and seal lap with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
  - 5. Install metal drip edges and sealant stops with ribbed sheet metal flashing by interlocking hemmed edges to form hooked seam. Seal seam with elastomeric sealant complying with requirements in Section 079200 "Joint Sealants" for application indicated.
  - 6. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.

7. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
  8. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.
- B. Install weep holes in veneers in head joints of first course of masonry immediately above embedded flashing.
1. Use specified weep/vent products to form weep holes.
  2. Use wicking material to form weep holes above flashing under brick sills. Turn wicking down at lip of sill to be as inconspicuous as possible.
  3. Space weep holes 24 inches o.c. unless otherwise indicated.
  4. Space weep holes formed from plastic tubing or wicking material 16 inches o.c.
  5. Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.
  6. Trim wicking material flush with outside face of wall after mortar has set.
- C. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- D. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/vent products to form vents.
1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

### **3.10 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.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
  2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
  3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
  4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
  5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
  6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

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7. Clean stone trim to comply with stone supplier's written instructions.
8. Clean limestone units to comply with recommendations in ILI's "Indiana Limestone Handbook."

**3.11 MASONRY WASTE DISPOSAL**

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
  1. Crush masonry waste to less than 4 inches in each dimension.
  2. Mix masonry waste with at least two parts of specified fill material for each part of masonry waste.
  3. Do not dispose of masonry waste as fill within 18 inches of finished grade.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

**END OF SECTION 042613**

## HIGH BOND VENEER MORTAR



# MVIS™ Hi-Bond Veneer Mortar

DS-246-0920

**Globally Proven  
Construction Solutions**



## 1. PRODUCT NAME

MVIS™ Hi-Bond Veneer Mortar

## 2. MANUFACTURER

LATICRETE International, Inc.  
1 LATICRETE Park North  
Bethany, CT 06524-3423 USA

Telephone: +1.203.393.0010, ext. 1235  
Toll Free: 1.800.243.4788, ext. 1235  
Fax: +1.203.393.1684  
Website: [laticrete.com](http://laticrete.com)

## 3. PRODUCT DESCRIPTION

The ultimate, polymer fortified, thin-set mortar for interior and exterior installation of masonry veneer, stone, ceramic tile, quarry tile, pavers and thin brick. MVIS Hi-Bond Veneer Mortar, designed to mix just with water, has a long open time with unsurpassed adhesion and workability.

### Uses

- Excellent for interior, exterior and submerged applications as well as providing superior bond to exterior glue plywood (interior only) and concrete. The ultimate thin-set for masonry veneer.

### Advantages

- Ultimate adhesion for masonry veneer
- Incredible bond to exterior glue plywood\* and concrete
- Excellent shear bond strength
- High performing
- Equipped with anti-microbial technology to protect the treated article
- Smooth and creamy formula
- Exceeds ASTM C270 compressive strength requirements for masonry veneer installations

- Passes IBC and IRC shear bond strength code requirements for adhered masonry veneer when tested in accordance with ASTM C482
- Exceeds ANSI A118.4
- Conforms to ISO 13007-1 with a classification of C2TES1P1
- LATICRETE® 25 Year System Warranty (United States and Canada) for masonry veneer installations over concrete and masonry substrates\*\*
- ANSI A118.11 and ANSI A118.15
- \* Interior Only.
- \*\* When used as a component of the LATICRETE® 25 Year System Warranty (United States and Canada) (DS 025.0)

### Suitable Substrates

- Exterior Glue Plywood (Interior Only)
- Concrete
- Concrete Block
- CMU
- Existing Masonry and Brick
- Existing Ceramic Tile And Stones
- Cement Terrazzo
- Gypsum Plaster (Interior use only, non-wet areas)
- Gypsum Wallboard (Interior use only, non-wet areas)
- Cement Backer Board (Consult cement backer board manufacturer for specific installation recommendations and to verify acceptability for exterior use)
- Cement Mortar
- Cement Render

### Packaging

50 lb bag (22.7 kg); 54 bags per pallet

### Color

Grey

### Approximate Coverage

Vertical Applications	Ft <sup>2</sup>	M <sup>2</sup>
1/4" x 3/8" (6 mm x 9 mm) Notched Trowel	60-70	5.6-6.5
1/2" x 1/2" (12 mm x 12 mm) Notched Trowel	40-45	3.7-4.2
Adhered Masonry Veneer Application Method	30-33	2.8-3.1

Coverage will vary depending on trowel notch size, type and size of tile/stone and substrate.

### Shelf Life

Factory sealed containers of this product are guaranteed to be of first quality for two (2) years if stored off the ground in a dry area. \*\*\* High humidity will reduce the shelf life of bagged product.

### Limitations

- Mastics, adhesive mortars and pointing mortars for masonry veneer, stone, ceramic tile, pavers and thin brick are not replacements for waterproofing membranes or air and water barriers. When a waterproofing membrane or air and water barrier is required, use Air & Water Barrier (see Section 10 FILING SYSTEMS).
- For veneer installations using this product, consult local building code requirements regarding limitations and installation system specifications.
- Not for use directly over particle board, luan, Masonite® or hardwood floors.
- Use LATAPOXY® 300 Adhesive for installing green marble, resin backed, or water sensitive tile, stone and agglomerates (refer to DS 633.0 for more information).
- Note: Surfaces must be structurally sound, stable and rigid enough to support ceramic/stone tile, thin brick and similar finishes. For exterior vertical installations over framed construction, the substrate deflection under all live, dead and impact loads, including concentrated loads, must not exceed L/600 where L=span length (except where local building codes specify more stringent deflection requirements).

### Cautions

- Consult SDS for more safety information.
- Some stone have low flexural strength and may not be suitable for all installations.
- Protect finished work from traffic until fully cured.
- Contains portland cement and silica sand. Causes severe skin burns and serious eye damage. Wear protective gloves, protective clothing and eye protection. In case of contact, flush thoroughly with water.
- DO NOT take internally. Silica sand may cause cancer, respiratory irritation or serious lung problems. Do not breathe dust. Wear a respirator in dusty areas.
- For white and light-colored stones, conduct test area to ensure no shadowing or staining is observed.
- Keep out of reach of children.

## 4. TECHNICAL DATA

### VOC/LEED Product Information

This product has been certified for Low Chemical Emissions (ULCOM/GG UL2818) under the UL GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes and Furnishings (UL 2818 Standard) by UL Environment.

Total VOC Content pounds/gallon (grams/liter) of product in unused form is 0.00 lb/gal (0.00 g/L).

### Applicable Standard

- ASTM C270
- ASTM C482
- ANSI A118.4
- ANSI 118.11
- ANSI A118.15
- ISO 13007-1
- This product has a cradle-to-gate (with options) Product-Specific (Type III) Environmental Product Declaration. The PCR review, life cycle assessment and declaration were independently verified by UL Environment in accordance with ISO 14025, ISO 14040 and ISO 14044.

### Physical Properties

MVIS™ Hi-Bond Veneer Mortar is ISO 13007-1 C2TES1

Test	Test Method	ISO 13007-1 C2 Specification	Results
28 Day Cure Tensile Adhesive Strength	ISO 13007 2 4.4.2	1 MPa (145 psi)	2.3 – 2.6 MPa (333–377 psi)
7 Day Cure 21 Day Water Immersion Tensile Adhesive Strength	ISO 13007 2 4.4.3	1 MPa (145 psi)	1.3–1.5 MPa (188 – 218 psi)
14 Day Cure 14 Day Heat Age Tensile Adhesive Strength	ISO 13007 2 4.4.4	1 MPa (145 psi)	2.4–3.0 MPa (348 – 435 psi)
7 Day Cure 21 Day Water Immersion 25 Freeze/Thaw Cycle Tensile Adhesive Strength	ISO 13007 2 4.4.5	1 MPa (145 psi)	1.2–1.4 MPa (174 – 200 psi)
Open Time After 30 Minutes	ISO 13007 2 4.1	0.5 MPa (73 psi)	1.7–1.9 MPa (246 – 276 psi)
Slip	ISO 13007 2 4.2	Less than or equal to 0.5 mm (0.02 inches)	0.5 mm (0.02 inches)
Transverse Deformation	ISO 13007 2 4.5	Greater than or equal to 2.5 mm (0.1 in.) and less than 5 mm (0.2 in.)	3.2-3.6 mm (0.13-0.14 in.)

**Working Properties**

<b>Open Time</b>	<b>40 minutes</b>
<b>Pot Life</b>	<b>2 hours</b>

Test	Test Method	Specification	Results
28 Day Cure Vitreous Tile Shear Strength	ANSI A118.15 7.2.5	>400 psi (2.76 MPa)	475–520 psi (3.2–3.6 MPa)
Shear Bond Vitreous Tile Water Immersion	ANSI A118.15 7.2.4	>200 psi (1.38 MPa)	275–300 psi (2.0-3.6 MPa)
28 Day Cure Quarry Tile To Plywood Shear Bond	ANSI A118.11 4.1.2	>150 psi (1.0 MPa)	240-270 psi (1.7-1.9 MPa)
28 Day Cure Bond Strength To Calcium Silicate	ASTM C482	N/A	350–370 psi (2.4–2.6 MPa)
28 Day Cure 20 Cycle Freeze/Thaw Bond Strength To Calcium Silicate	ASTM C482	N/A	230–260 psi (1.6–1.8 MPa)
28 Day Compressive Strength	ASTM C270	2000 psi (13.8 MPa)	2400–2450 psi (16.5-16.9 MPa)

<b>Time to Heavy Traffic</b>	<b>24 hours</b>
<b>Wet Density</b>	<b>13.8 lb/gal (1.65 g/cc)</b>

Specifications subject to change without notification. Results shown are typical but reflect test procedures used. Actual field performance will depend on installation methods and site conditions.

## 5. INSTALLATION

### • Surface Preparation

All surfaces should be between 40°F (4°C) and 90°F (32°C) and structurally sound, clean and free of all dirt, oil, grease, paint, concrete sealers or curing compounds. Rough or uneven concrete surfaces should be made smooth with MVIS™ Premium Mortar Bed. Dry, dusty concrete slabs or masonry should be dampened and excess water swept off. Installation may be made on a damp surface. Concrete slabs must be plumb and true to within 1/4"(6 mm) in 10 ft (3 mm).

1. Installer must verify that deflection under all live, dead and impact loads of substrates does not exceed industry standards of L/600 for AMSMV units or stone installations where L=span length. For exterior vertical installations over framed construction, the substrate deflection under all live, dead and impact loads, including concentrated loads, must not exceed L/600 where L=span length.

*Note: MVIS Hi-Bond Veneer Mortar does not require a minimum cure time for concrete walls or slabs. Expansion joints shall be provided through the veneer from all construction or expansion joints in the substrate. For natural stone installations on floors follow ANSI specification A108.01-3.7 "Requirements for Movement Joints: Preparations by Other Trades" or TCNA detail EJ-171 "Movement Joints—Vertical & Horizontal". Do not cover expansion joints with mortar.*

### Mixing

Place clean, potable water into a clean pail. Add MVIS Hi-Bond Veneer Mortar. Use approximately 5.5 qts (5.2 L) of water for 50 lbs (22.7 kg) of powder. (To mix smaller quantities use 3.6 parts powder to 1 part water.) Mix by hand or with a slow speed mixer to a smooth, trowelable consistency. Allow mortar to slake for 5–10 minutes. Remix without adding any more water or powder. During use, stir occasionally to keep mix fluffy. DO NOT temper with water.

*Note: For use as a slurry bond coat; mix 7 quarts (6.6 L) water to a 50 lb (22.7 kg) bag of MVIS Hi-Bond Veneer Mortar.*

### Application

See applicable LATICRETE details in Masonry Veneer Installation System Brochure (DS 002.8).

*Note: If installing on sheathed wood or steel frame construction with wire lath, use MVIS Premium Mortar Bed for the wall render prior to*

*installing applicable MVIS Air & Water Barrier or MVIS Hi-Bond Veneer Mortar.*

If waterproofing is required, install MVIS Air & Water Barrier per instructions (see DS 663.0 and DS 663.5) to the substrate prior to installation of MVIS Hi-Bond Veneer Mortar. For adhered stone, thin brick and manufactured stone masonry veneers installations, use a gauging trowel to key a thin coat of MVIS Hi-Bond Veneer Mortar to cover entire back of the veneer units. Spread additional mortar onto the back of the skim coated veneer sufficient to completely fill the space between the veneer and the substrate when compressed against the substrate. Press the mortar covered back of the veneer against the substrate at the desired final position. Slide the unit roughly 1 -1.5" (25-38mm) diagonally from the desired final position and back into the desired position while maintaining even pressure. This should be done in such a manner as to squeeze the mortar to fill the entire space between the veneer unit and the substrate, allowing excess mortar to extrude on all sides around the veneer unit. Clean excess extruded mortar with trowel and spread onto the next veneer unit to be installed.

*Note: Prior to installation, ensure back of veneer units are clean of dust, laitance, loose concrete crumbs and any excess film that could impede bond.*

Alternate method for thin brick, tile, calcium silicate unit and stone installations: key MVIS Hi-Bond Veneer Mortar into the substrate thoroughly. Then, comb on additional mortar with the notched side, use 1/4" x 3/8" (6 mm x 9 mm), 1/2" x 1/2" (12 mm x 12 mm) loop or notch trowel. Back butter all thin brick, veneer units 8" x 8" (200 mm x 200 mm), 3/4" (19mm) loop trowel or larger to provide full bedding of the veneer. Place veneer into the mortar and adjust to desired position. Clean any excess mortar on sides of stone or tile veneer.

*Note: Use proper sized notched trowel to ensure full bedding of the stone veneer. Spread only enough mortar for maximum coverage with tile within 15–20 minutes. Trowel notch size determined by contractor, size of veneer and job-site coverage. Adjust as necessary. Check mortar for complete coverage by periodically removing veneer unit and inspecting the transfer onto substrate and back of the stone veneer. The size and weight of the veneer will vary.. Due to job site conditions and differences in finish material types; ledger boards, shims, wedges or spacers may be required to maintain finish levels and heights.*

### Grouting/Pointing (if required)

When required, point installation after a minimum of 24 hours curing time at 70°F (21°C).

Point with MVIS Epoxy Pointing Mortar (conduct test area to determine suitability and acceptability with veneer) MVIS Premium Pointing Mortar mixed with water or MVIS Pointing Mortar mixed with water.

### **Cleaning**

Clean tools and stone work with water while mortar is fresh.

- DS 230.15: LATICRETE 15 Year System Warranty – For Steel or Wood Framed Exterior Facades (United States and Canada)
- DS 025.0: LATICRETE 25 Year System Warranty (United States and Canada)\*\*\*\* When used as a component of the LATICRETE® 25 Year System Warranty (United States and Canada) (DS 025.0)

## **6. AVAILABILITY AND COST**

### **Availability**

LATICRETE materials are available worldwide.

### **For Distributor Information, Call:**

Toll Free: 1.800.243.4788

Telephone: +1.203.393.0010

For on-line distributor information, visit LATICRETE at

[laticrete.com](http://laticrete.com)

### **Cost**

Contact a LATICRETE Distributor in your area.

## **7. WARRANTY**

See 10. FILING SYSTEM:

- DS 230.13: 1 Year Product Warranty
- DS-230.15SPD: LATICRETE 15 Year System Warranty For Steel or Wood Framed Exterior Facades (United States and Canada) MVIS

## **8. MAINTENANCE**

Non-finish LATICRETE® and LATAPOXY® installation materials require no maintenance but installation performance and durability may depend on properly maintaining products supplied by other manufacturers.

## **9. TECHNICAL SERVICES**

### **Technical Assistance**

Information is available by calling the LATICRETE Technical Service Hotline:

Toll Free: 1.800.243.4788, ext. 1235

Telephone: +1.203.393.0010, ext. 1235

Fax: +1.203.393.1948

### **Technical and Safety Literature**

To acquire technical and safety literature, please visit our website at [laticrete.com](http://laticrete.com).

## **10. FILING SYSTEM**

Additional product information is available on our website at [laticrete.com](http://laticrete.com). The following is a list of related documents:

- DS 230.13: LATICRETE Product Warranty

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LATICRETE International, Inc.

One LATICRETE Park North, Bethany, CT 06524-3423 USA • 1.800.243.4788 • +1.203.393.0010 • [www.laticrete.com](http://www.laticrete.com)

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## FLUID APPLIED CRACK ISOLATION MEMBRANE

**MVIS™ WCI**

DS-36616-0221

**Globally Proven  
Construction Solutions****1. PRODUCT NAME**

MVIS™ WCI

**2. MANUFACTURER**LATICRETE International, Inc.  
1 LATICRETE Park North  
Bethany, CT 06524-3423 USA

Telephone: +1.203.393.0010, ext. 1235

Toll Free: 1.800.243.4788, ext. 1235

Fax: +1.203.393.1684

Website: [laticrete.com](http://laticrete.com)**3. PRODUCT DESCRIPTION**

MVIS™ WCI is single component, load bearing, fluid applied, bulk water management, crack isolation, air barrier membrane. MVIS WCI produces a seamless, monolithic elastomeric coating and bonds directly to a wide variety of substrates. MVIS WCI is a low VOC, self-curing, water – based formula containing antimicrobial technology used in construction to improve building efficiencies & durability. MVIS WCI is designed to protect the building finishes.

**Uses**

- Performs as a bulk water management system and crack isolation membrane in an MVIS system when placed under exterior veneer finishes (ceramic tile, stone, manufactured stone veneer and directly over cement backer board.)
- Used as a component with air barrier assembly, when used with other wall components within the building envelope.

- Can handle up to an 1/8" in-plane movement without cracking through finished material.
- Consult LATICRETE Technical Services Department for further options.

**Advantages**

- Superior Crack Isolation to help prevent in-plane movement from transmitting through finished materials
- Bulk Water Management to help prevent water migration through the full system
- Adhered Exterior veneers may be installed to membrane using Polymer Fortified Veneer Mortars over concrete, brick, cement plaster and cement backer board
- Excellent bond strength.
- Equipped with Microban anti-microbial technology to protect the treated article.
- Lighter color for ease of inspection.
- No solvents and non-flammable.
- Exceeds ANSI A118.12

**Suitable Substrates**

- Cement Backer Board (Consult cement backer board manufacturer for specific installation recommendations and to verify acceptability for exterior use)
- Cement Block
- Concrete and Brick Masonry (Suitable as a load bearing substrate for installation of direct adhered masonry veneers)
- Concrete Block

**Packaging**

5 Gallon Pail (18.9L) (36 commercial units/pallet)

**Approximate Coverage**

Commercial Unit: 250 ft<sup>2</sup> (23.2 m<sup>2</sup>) Each wet coat thickness is 15 – 22 mils, 0.015" – 0.022" (0.4 – 0.6mm); use wet film gauge to check thickness; consumption/coat is approximately 0.01 gal/ft<sup>2</sup> (0.4 L/m<sup>2</sup>); coverage/coat is approximately 50 ft<sup>2</sup>/gal (1.25 m<sup>2</sup>/L). Applied in two coats for a total dry coat thickness of 20-30 mils, 0.02-0.03" (0.5-0.8mm); for a total of 250 ft<sup>2</sup> per 5 gallons/23.2m<sup>2</sup> per (18.9 L) pail.

**Shelf Life**

Factory sealed containers of this product are guaranteed to be of first quality for two (2) years if stored at temperatures >32°F (0°C) and <110°F (43°C).>

## Limitations

Do not bond to particle board, interior glue plywood, luan, Masonite® or hardwood surfaces.

When used as a component of an air barrier system, MVIS™ WCI does not function as a waterproofing membrane.

MVIS WCI may not necessarily be recommended outboard of the insulation in some Climate Zones.

Always consult with design professional for membrane position in an assembly.

OSB is not suitable as a veneer substrate.

Do not install over structural cracks, cracks with vertical movement or cracks with >1/8" (3 mm) horizontal movement.

Do not use as a primary roofing membrane over occupied space.

Do not expose to negative hydrostatic pressure, rubber solvents or ketones.

Do not expose membrane directly to sun or weather for more than 90 days for direct adhered masonry veneer installations.

Do not use below grade.

Do not install if surface or air temperature is below 50°F (10°C) or above 90°F (32°C).

Not for use beneath directly applied cement or other plaster finishes. Consult with plaster manufacturer for their recommendations when waterproofing membrane is required under plaster finishes.

## Cautions

Cautions Consult SDS for safety information.

- Review local building codes and obtain any required approvals before using MVIS™ WCI.
- Placement of MVIS WCI in a wall assembly to be determined by project design professional.
- It is the responsibility of the project design professionals to ensure that the air barrier, vapor barrier, insulation, and waterproofing membrane are all properly placed to prevent the movement of air and moisture into and out of the building to ensure maximum performance.
- Allow wet mortars/renders to cure for a minimum of 72 hours at 70°F (21°C) / 50% R.H. prior to installing MVIS WCI.
- For all finishes: The successful performance and installation of exterior finishes is dependent upon the proper design and construction of the finish, adjacent building materials and systems of the assembly. Follow all applicable industry guidelines and building codes for the respective utilized finish.
- When MVIS WCI is installed in conjunction with other building materials; it must be properly integrated so that water is diverted to the exterior of the wall system.
- Use of certain additives, coatings or cleansers on or in the façade system may impact the performance of MVIS WCI. It is the user's responsibility to determine the proper construction materials needed.
- For adhered veneer applications, substrates must be structurally sound, stable and rigid enough to support the intended finish. Substrate deflection under all live,

dead and impact loads, including concentrated loads, must not exceed L/600 where L=span length.

- Placement of MVIS WCI in a wall assembly to be determined by project design professional.

## 4. TECHNICAL DATA

### VOC/LEED Product Information

Total VOC content pounds/gallon (grams/liter) of product in unused form is 0.02lb/gal (2.39 g/l).

### Applicable Standard

- ANSI 118.12

Specifications subject to change without notification. Results shown are typical but reflect test procedures used. Actual field performance will depend on installation methods and site conditions.

## 5. INSTALLATION

See How to Install Instructions DS-3227-0820 for complete installation instructions.

MVIS™ WCI can be applied using airless spray equipment or paint roller. All areas must have two coats to ensure proper coverage. Substrate will not show through LATICRETE WCI if coated with 0.020–0.030" (0.5–0.8 mm) of dried membrane. Color changes from off-white to white when fully cured. Refer to LATICRETE® TDS 410M for more information on the spray application of MVIS WCI.

## 6. AVAILABILITY AND COST

### Availability

LATICRETE materials are available worldwide.

### For Distributor Information, Call:

Toll Free: 1.800.243.4788

Telephone: +1.203.393.0010

For on-line distributor information, visit LATICRETE at [laticrete.com](http://laticrete.com)

### Cost

Contact a LATICRETE Distributor in your area.

## 7. WARRANTY

See 10. FILING SYSTEM:

## 8. MAINTENANCE

Non-finish LATICRETE and LATAPOXY installation materials require no maintenance but installation performance and durability may depend on properly maintaining products supplied by other manufacturers.

## 9. TECHNICAL SERVICES

### Technical Assistance

Information is available by calling the LATICRETE  
Technical Service Hotline:

Toll Free: 1.800.243.4788, ext. 1235  
Telephone: +1.203.393.0010, ext. 1235  
Fax: +1.203.393.1948

### Technical and Safety Literature

To acquire technical and safety literature, please visit our  
website at [laticrete.com](http://laticrete.com).

## 10. FILING SYSTEM

Additional product information is available on our  
website at [laticrete.com](http://laticrete.com). The following is a list of related  
documents:

Additional product information is available on our  
website at [www.laticrete.com](http://www.laticrete.com). The following is a list of  
related documents:

DS 230.13 LATICRETE Product Warranty  
DS 230.15 LATICRETE 15 Year System Warranty – For  
Steel or Wood Framed Exterior Facades (United States  
and Canada)  
DS 025.0: LATICRETE 25 Year System Warranty  
(United States and Canada)  
DS-3227 How to / Installation Instructions  
TDS 410M Spraying MVIS WCI

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## WATERPROOFING/ANTI-FRACTURE FABRIC



# Waterproofing/Anti-Fracture Fabric

DS-237.0-0314

**Globally Proven  
Construction Solutions**



## 1. PRODUCT NAME

Waterproofing / Anti-Fracture Fabric

## 2. MANUFACTURER

LATICRETE International, Inc.

1 LATICRETE Park North

Bethany, CT 06524-3423 USA

Telephone: +1.203.393.0010, ext. 235

Toll Free: 1.800.243.4788, ext. 235

Fax: +1.203.393.1684

Internet: [www.laticrete.com](http://www.laticrete.com)

## 3. PRODUCT DESCRIPTION

Waterproofing/Anti-Fracture Fabric is a thin, flexible non-woven fabric designed for use specifically with latex based membranes. The Waterproofing/ Anti-Fracture Fabric adds strength to load-bearing waterproofing membranes specifically for the special requirements of ceramic tile, stone and brick installations. A self-curing liquid rubber polymer and the Waterproofing/Anti-Fracture Fabric are quickly applied to form a flexible, seamless membrane that bonds to a wide variety of substrates.

### Uses

See data sheet for the specific membrane being used for suitable uses

### Advantages

- Required for use with 9235 Waterproofing Membrane, full fabric applications and Blue 92 Anti-Fracture Membrane
- Required for use with HYDRO BARRIER™ in coves, corner and changes of plain for waterproofing applications
- Can be used with HYDRO BAN®, Air & Water Barrier, WATERTIGHT™ Floor N' Wall Waterproofing & Crack Isolation or 9237 Waterproofing Membrane for added strength
- Interior and exterior use
- Vertical and horizontal surfaces (including ceilings)
- Provides added strength to installation areas with added stress

### Suitable Substrates

See data sheet for the specific membrane being used for suitable substrates.

### Packaging

300 ft<sup>2</sup> (27.8 m<sup>2</sup>) roll fabric 38" (965 mm wide)

75 ft (23 m) long roll fabric 6" (150 mm wide)

### Approximate Coverage

See data sheets for the specific latex based Membrane.

### Shelf Life

Factory sealed containers of this product are guaranteed to be of first quality for two (2) years if stored at temperatures >32°F (0°C) and 110°F (43°C).

### Limitations

- For installation over Glass Mat Gypsum Exterior Sheathing Panels use Air & Water Barrier only. Refer to DS661.0 & 661.5 for specific installation instructions.
- Do not use with a membrane as a primary roofing membrane over occupied space
- Do not use with a membrane over expansion joints, structural cracks or cracks with vertical differential movement
- Do not use with a waterproofing membrane over cracks >1/8" (3 mm) in width
- Do not use with a waterproofing membrane as a vapor barrier (especially in steam rooms)
- Not for use with a membrane directly over OSB, particle board, luan, Masonite®, or hardwood floors unless specifically stated as a suitable application in the membrane data sheet.
- Do not expose unprotected membranes to sun or weather for >30 days
- Do not expose membranes to negative hydrostatic pressure, excessive vapor transmission, rubber solvents or ketones
- membranes must be covered with ceramic tile, stone, brick, concrete, screeds, terrazzo or other traffic-bearing course, unless otherwise noted in specific membrane data sheet. Use protection board for temporary cover.
- Obtain approval by local building code authority before using waterproofing membrane in shower pan applications.
- Do not install a membrane directly over single layer wood floors, plywood tubs/showers/ fountains or similar constructs

### Cautions

Consult specific membrane MSDS for more safety information.

- Protect from traffic or water until fully cured

#### 4. TECHNICAL DATA

##### Applicable Standards

See the individual membrane data sheets for specific technical data.

##### Approvals

Go to [www.laticrete.com](http://www.laticrete.com) or see the individual data sheets for specific product approvals.

#### 5. INSTALLATION

Refer to data sheet of specific latex based membrane for installations instructions.

#### 6. AVAILABILITY AND COST

##### Availability

LATICRETE® and LATAPOXY materials are available worldwide.

##### For Distributor Information, Call:

Toll Free: 1.800.243.4788

Telephone: +1.203.393.0010

For on-line Distributor information, visit LATICRETE at [www.laticrete.com](http://www.laticrete.com).

##### Cost

Contact a LATICRETE Distributor in your area.

#### 7. WARRANTY

See 10. FILING SYSTEM

DS 230.13: LATICRETE Product Warranty (United States and Canada)

See individual waterproofing membrane data sheets for specific warranty information.

#### 8. MAINTENANCE

LATICRETE and LATAPOXY grouts require routine cleaning with a neutral pH soap and water. All other LATICRETE and LATAPOXY materials require no maintenance but installation performance and durability may depend on properly maintaining products supplied by other manufacturers.

#### 9. TECHNICAL SERVICES

##### Technical Assistance

Information is available by calling the LATICRETE Technical Service Hotline:

Toll Free: 1.800.243.4788, ext. 235

Telephone: +1.203.393.0010, ext. 235

Fax: +1.203.393.1948

##### Technical and Safety Literature

To acquire technical and safety literature, please visit our website at [www.laticrete.com](http://www.laticrete.com).

#### 10. FILING SYSTEM

Additional product information is available on our website at [www.laticrete.com](http://www.laticrete.com). The following is a list of related documents:

DS 230.13:	LATICRETE Product Warranty (United States and Canada)
DS 105.0:	HYDRO BARRIER™
DS 236.0:	9235 Waterproofing Membrane
DS 633.0:	LATAPOXY 300 Adhesive
DS 641.0:	9237 Waterproofing Membrane
DS 661.0:	Air & Water Barrier
DS 663.0:	HYDRO BAN®
DS 660.0:	WATERTIGHT™ Floor N'Wall Waterproofing & Crack Isolation
DS 6200.1:	LATICRETE LATASIL™
DS 003.9:	WATERTIGHT Floor N'Wall Waterproofing & Crack Isolation Instructions
DS 105.5:	HYDRO BARRIER Installation Instructions
DS 663.5:	HYDRO BAN Installation Instructions
DS WPAF.5:	Fabric Reinforced Membrane Installation Instructions
TDS 152:	"Bonding Ceramic Tile, Stone or Brick Over Wood Floors"
TDS 169:	"Flood Testing Procedures"
TDS 189:	9235 Waterproofing Membrane Checklist

**SECTION 047200**

**CAST STONE**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Custom cast stone (RockCast's Custom Cast Stone Series).

**1.2 RELATED SECTIONS**

- A. Section 042200 –Concrete Unit Masonry.
- B. Section 042613 – Masonry Veneer.
- C. Section 047200 – Cast Stone Masonry.
- D. Section 079200 – Joint Sealants.

**1.3 REFERENCES**

- A. ASTM A 615/A 615M - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
- B. ASTM A767/A767M - Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
- C. ASTM C 33 - Concrete Aggregates.
- D. ASTM C 150 - Portland Cement.
- E. ASTM C 173 - Air Content of Freshly Mixed Concrete by the Volume Method
- F. ASTM C 231 - Air Content of Freshly Mixed Concrete by the Pressure Method
- G. ASTM C 260 - Specification for Air Entrained Admixtures for Concrete
- H. ASTM C 270 - Mortar for Unit Masonry.
- I. ASTM C 426 - Linear Drying Shrinkage of Concrete Masonry Units.
- J. ASTM C 494 - Chemical Admixtures for Concrete.
- K. ASTM C 618 - Coal Fly Ash and Raw or Calcined Natural Pozzolan for use as a Mineral Admixture in Concrete



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- L. ASTM C 666 - Resistance of Concrete to Rapid Freezing and Thawing.
- M. ASTM C 979 - Pigments for Integrally Colored Concrete.
- N. ASTM C 989 - Ground Granulated Blast- Furnace Slag for use in Concrete
- O. ASTM C 1194 - Compressive Strength of Architectural Cast Stone.
- P. ASTM C 1195 - Absorption of Architectural Cast Stone.
- Q. ASTM C 1364 - Architectural Cast Stone.
- R. Cast Stone Institute Technical Manual (Current Edition).
- S. ACI 530 "Building Code Requirements for Masonry Structures"

**1.4 DEFINITIONS**

- A. Cast Stone: An architectural stone unit manufactured to copy fine grain texture and color of natural cut stone used in unit masonry applications. Meets ASTM C 1364 requirements.
  - 1. Dry Cast Concrete Products: Manufactured from zero-slump concrete.
    - a. Vibrant Dry Hand Tamp Casting Method: Vibratory compaction by hand tamp of earth-moist, zero-slump concrete against rigid mold until it is densely compacted.
  - 2. Wet Cast Concrete Products: Manufactured from measurable slump concrete.
    - a. Wet Casting Method: Manufactured from measurable slump concrete and consolidated into a mold.

**1.5 SUBMITTALS**

- A. Comply with Section 013300 - Submittal Procedures.
- B. Product Data: Submit manufacturer's product data.
- C. Shop Drawings: Submit manufacturer's shop drawings, including profiles, cross sections, modular unit lengths, reinforcement (if required), exposed faces, anchors and anchoring method recommendations (if required), and annotation of cast stone types and location.
- D. Samples: Submit pieces of manufacturer's cast stone units that represent general range of texture and color proposed to be furnished for project.
- E. Test Results:
  - 1. Submit manufacturer's test results from cast stone units previously made by manufacturer using materials from same sources proposed for use in project.
- F. Manufacturer's Project References: Submit list of projects similar in scope, including project name and location, name of architect, and type and quantity of cast stone installed.
- G. Warranty: Submit manufacturer's standard warranty.

**1.6 QUALITY ASSURANCE**

- A. Manufacturer Qualifications:

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1. Sufficient plant facilities to provide quality, shapes, quantities, and sizes of cast stone units required without delaying progress of the Work.
2. Minimum of 10 years experience in producing masonry units or cast stone.
3. Fabricating plant shall be certified by the Cast Stone Institute, National Precast Concrete Association, or equivalent certification program.
4. Manufacturer shall have an internal Quality Assurance Testing Program with certified laboratory technician(s).
5. Custom Cast Stone Series and Architectural Masonry Veneer Series are to be manufactured from a similar mix design to match color and texture.

**1.7 DELIVERY, STORAGE, AND HANDLING**

A. Delivery:

1. Deliver cast stone units secured to shipping pallets and protected from damage and discoloration.
2. Provide itemized shipping list.
3. Number each piece individually, as required, to match shop drawings and schedules.

B. Storage:

1. Store cast stone units and installation materials in accordance with manufacturer's instructions.
2. Store cast stone units on pallets with nonstaining, waterproof covers.
3. Do not double stack pallets.
4. Ventilate units under covers to prevent condensation.
5. Prevent contact with dirt and splashing.

C. Handling:

1. Protect cast stone units, including corners and edges, during storage, handling, and installation to prevent chipping, cracking, staining, or other damage.
2. Handle long units at center and both ends simultaneously to prevent cracking.
3. Do not use pry bars or other equipment in a manner that could damage units.

## 1.8 SCHEDULING

- A. Schedule and coordinate production and delivery of cast stone units with unit masonry work.

## PART 2 PRODUCTS

### 2.1 MANUFACTURER

- A. Reading Rock, Inc., 4600 Devitt Drive, Cincinnati, Ohio 45246  
Phone (800) 482-6466 Fax (513) 874-2361  
Web Site [www.readingrock.com](http://www.readingrock.com) E-Mail [info@readingrock.com](mailto:info@readingrock.com)
- B. Substitutions not permitted.

### 2.2 APPROVED DISTRIBUTOR

### 2.3 CAST STONE

- A. Custom Cast Stone Units: RockCast's Custom Cast Stone Series.
- B. Compliance: ASTM C 1364.
- C. Casting Method: Vibrant dry hand tamp or wet cast as specified and/or required.
- D. Texture: Smooth As specified.
- E. Color:
  - 1. VDT Colors: Color to be selected by Architect from manufacturers available colors, to determine match to existing building.
  - 2. Wetcast Colors: Color to be selected by Architect from manufacturers available colors, to determine match to existing building.
- F. Units: To match the size, type and color of existing units on building.
- G. Profiles: Cornices, Sills, Headers, Medallions, Coping, Soffit. To match the size, type and color of existing units on building.
- H. Test Results:
  - 1. Compressive Strength, ASTM C 1194: Minimum 6,500 psi at 28 days.
  - 2. Absorption, ASTM C 1195: Maximum 6 percent, by the cold water method, at 28 days.
  - 3. Linear Shrinkage, ASTM C 426: Less than .065 percent.
  - 4. Density, ASTM C 140: Greater than 120 pounds per cubic foot.
  - 5. Freeze-Thaw, ASTM C 666: Less than 5 percent cumulative mass loss after 300 cycles.
  - 6. Air Content: ASTM C 173 or C 231 for wet cast product shall be 4-8% for units exposed to freeze-thaw environments; air entrainment is not required for VDT products.
- I. Curing: Cure in enclosed chamber at 100 percent relative humidity and minimum 90 degrees F for up to 16 hours and yard cure for a minimum of 3 days.

## 2.4 CAST STONE MATERIALS

- A. Portland Cement: ASTM C 150, Type I or III. White and/or gray as required to match specified color.
- B. Coarse Aggregates: ASTM C 33, except for gradation. Granite, quartz, or limestone.
- C. Fine Aggregates: ASTM C 33, except for gradation. Manufactured or natural sands.
- D. Pigments: ASTM C 979, except do not use carbon black pigments. Inorganic iron oxide pigments.
- E. Admixtures:
  - 1. Water Reducing, Retarding, and Accelerating Admixtures: ASTM C 494.
  - 2. ASTM C 260 for air-entraining admixtures
  - 3. Other admixtures: integral water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
  - 4. ASTM C 618 for mineral admixtures
  - 5. ASTM C 989 for ground granulated blast-furnace slag
- F. Water: Potable.
- G. Reinforcing Bars: ASTM A 615, deformed steel bars. Epoxy coated or galvanized when covered with less than 1-1/2 inches of material.
  - 1. Galvanized Coating: ASTM A 767.

## 2.5 TEXTURE AND COLOR

- A. General: Match texture and color of full-size sample on file with Architect.
- B. Texture of Surfaces Exposed to View:
  - 1. Fine-grained texture similar to natural stone.
  - 2. Approximately equal to approved sample when viewed in direct daylight at 10 feet.
- C. Surface Air Voids:
  - 1. Size: Maximum 1/32 inch.
  - 2. Density: Less than 3 occurrences per any 1 square inch.
  - 3. Viewing Conditions: Not obvious under direct daylight at 10 feet.
- D. Finish:
  - 1. Minor chipping resulting from shipping and delivery shall not be grounds for rejection of units.
  - 2. Minor chips shall not be obvious under direct daylight at 20 feet, as determined by Architect.
  - 3. The occurrence of crazing or efflorescence shall not constitute a cause for rejection.
- E. Color Variation:
  - 1. Viewing Conditions: Compare in direct daylight at 10 feet, between units of similar age, subjected to similar weathering conditions.
  - 2. Total Color Difference: ASTM C 1364, 6 units.
  - 3. Hue Difference: ASTM C 1364, 2 units.

## **2.6 MORTAR**

- A. Mortar: ASTM C 270, Type N.

## **2.7 ACCESSORIES**

- A. Anchors: Non-corrosive type, sized for conditions. Hot-dip galvanized steel.
- B. Sealant: As specified in Section 079000.
- 3. Cleaner: Prosoco Sure Klean Custom Masonry Cleaner, Prosoco Sure Klean 600 Detergent Prosoco Sure Klean Vana Trol, Prosoco Light Duty Cleaner \* or EaCo Chem NMD-80. If EaCo Chem NMD-80 is used follow their application process.

\* Note: Aggressive cleaners may remove too much of the concrete surface paste making some of the color to appear to be "stripped." Therefore, on darker units a less aggressive cleaner such as Prosoco's Light Duty Cleaner should be used to maintain color.

## **2.8 FABRICATION**

- A. Shapes: Unless otherwise indicated on drawings, provide:
  - 1. Suitable wash on exterior sills, copings, projecting courses, and units with exposed top surfaces.
  - 2. Drips on projecting units, wherever possible.

## **2.9 TOLERANCES**

- A. General: Manufacture cast stone and concrete masonry veneer units within tolerances in accordance with Cast Stone Institute Technical Manual, unless otherwise specified.
- B. Cross Section Dimensions: Do not deviate by more than plus or minus 1/8 inch from approved dimensions.
- C. Length of Units: Do not deviate by more than length/360 or plus or minus 1/8 inch, whichever is greater, not to exceed plus or minus 1/4 inch.
- 4. Warp, Bow, or Twist: Do not exceed length/360 or plus or minus 1/8 inch, whichever is greater.

## **2.10 PRODUCTION QUALITY CONTROL**

- A. Mix Designs: Test new and existing mix designs for applicable compressive strength and absorption compliance before manufacturing cast stone units.
- B. Plant Production Testing: Test compressive strength and absorption from specimens selected at random from plant production. Tests to be conducted by certified laboratory testing technicians.
  - 1. Custom Cast Stone Units: Test in accordance with ASTM C 1194 and C 1195.

## **PART 3 EXECUTION**

### 3.1 EXAMINATION

- A. Examine construction to receive cast stone units. Notify Architect if construction is not acceptable. Do not begin installation until unacceptable conditions have been corrected.
- B. Examine cast stone units before installation. Do not install unacceptable units.
  - 1. All RockCast products are shipped on a pallet and have one unfinished side. Textured units are to be set with the texture face forward and smooth units are stacked "face up" on the pallet.
  - 2. RockCast's Custom Cast Stone Series units do not have returns or finished ends unless otherwise ordered and noted on the shop drawings.

### 3.2 INSTALLATION

- A. Install units in conjunction with masonry, as specified in Section 042200 and Section 042613.
- B. Pull units from multiple cubes during installation to minimize variation in color and help with natural blending.
- C. Cut units using motor-driven masonry saws. Finished ends should be turned to the visible side and the saw cut turned to the inside of the mortar joint to hide exposed aggregates and saw marks.
- D. Do not use pry bars or other equipment in a manner that could damage units.
- E. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
- F. Use Type N mortar (ASTM C 270), unless specified otherwise.
- G. Per ACI 530.1, it is not necessary, nor recommended, to wet the units prior to installation.
- H. Set units in full bed of mortar, unless otherwise indicated on the drawings. It is not necessary to rake joints for later tuckpointing. Standard full mortar application with tooling is all that is necessary.
- I. Fill vertical joints with mortar.
- J. Leave head joints in copings and similar components open for sealant.
- K. Make joints 3/8 inch, unless otherwise indicated on the drawings.
- L. Mortar joints should have a slight concave profile (unless specified otherwise).
- M. Remove excess mortar immediately.
- N. Remove mortar fins and smears before tooling joints.
- O. Cover wainscot for protection and bond separation with plastic, felt paper or other approved products.
- P. Cover freshly installed masonry products as required to assist with the curing process.
- Q. Sealant Joints:
  - 1. As specified in Section 079000.
  - 2. Prime ends of units, insert properly sized backing rod, and install sealant.

3. Provide sealant joints at following locations:
  - a. Copings and cast stone units with exposed tops.
  - b. Joints at relieving angles.
  - c. Control and expansion joints.
  - d. As indicated on the drawings.

### **3.3 TOLERANCES**

- A. Installation Tolerances:
  1. Variation from Plumb: Do not exceed 1/8 inch in 5 feet or 1/4 inch in 20 feet or more.
  2. Variation from Level: Do not exceed 1/8 inch in 5 feet, 1/4 inch in 20 feet, or 3/8 inch maximum.
  3. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch or 1/4 of nominal joint width, whichever is greater.
  4. Variation in Plane Between Adjacent Surfaces: Do not exceed 1/8-inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

### **3.4 CLEANING**

- A. Clean exposed units after mortar is thoroughly set and cured.
- B. Perform test of cleaner on small area of 4' x 4' on each type and color and receive approval by Architect before full cleaning. Let test area dry 4 to 5 days before inspection. Keep test area for future comparison.
- C. Clean units by wetting down the surface first, before using the specified cleaner (as specified in Section 2.7.C). Brush on cleaner, let dwell for 2 to 3 minutes. Reapply cleaner, scrub surface with masonry brush and rinse off thoroughly. Areas with heavy soiling use a wood block or non-metallic scraper.
- D. Apply cleaner to units in accordance with cleaner manufacturer's instructions.
- E. Do **not** use the following to clean units:
  1. Muriatic acid.
  2. Power washing.
  3. Sandblasting.
  4. Harsh cleaning materials or methods that would damage or discolor surfaces.

### **3.5 REPAIR**

- A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.
- B. Repair with touchup materials provided by manufacturer in accordance with manufacturer's instructions.
- C. Repair methods and results to be approved by Architect.

### **3.6 INSPECTION AND ACCEPTANCE**

- A. Inspect completed installation in accordance with Cast Stone Institute Technical Manual.

**3.7 WATER REPELLANT**

- A. Sealer: Prosoco Sure Klean Weather Seal Siloxane WB or PD or Hydrozo Enviroseal 7 according to manufacturer's recommendations. Apply water repellant for weatherproofing in accordance with water repellant manufacturer's instructions.
- B. Apply water repellant after installation, cleaning, repair, inspection, and acceptance of units are completed.

**3.8 PROTECTION**

- A. Protect installed units from splashing, stains, mortar, and other damage.

**END OF SECTION 047200**



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**SECTION 050170.51**

**DECORATIVE METAL CLEANING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes decorative metal cleaning as follows:
  - 1. Cleaning metal.
  - 2. Removing paint
  - 3. Removing corrosion.
  - 4. Priming for repainting.
- B. Related Requirements:
  - 1. Section 013516 "Alteration Project Procedures" for general remodeling, renovation, repair, and maintenance requirements.

**1.3 DEFINITIONS**

- A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
- B. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include recommendations for product application and use.
  - 2. Include test data substantiating that products comply with requirements.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For decorative metal refinishing specialist.
- B. Preconstruction Test Reports: For chemical cleaning of and paint removal from decorative metal.

**1.6 QUALITY ASSURANCE**

- 1. Single Specialist: Subject to compliance with requirements, engage the same specialist firm to perform the work of Section 050170.61 "Decorative Metal Repair" and Section 050170.63 "Decorative Metal Refinishing" and the work of this Section.

**1.7 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with decorative metal cleaning only when existing and forecasted weather conditions are within the environmental limits set by each manufacturer's written instructions and specified requirements.

## **PART 2 - PRODUCTS**

### **2.1 CLEANING MATERIALS**

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F.
- C. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
- D. Nonacidic Liquid Chemical Cleaner: Manufacturer's standard mildly alkaline liquid cleaner, formulated for removing organic soiling from ordinary building materials, including polished stone, brick, copper, brass, bronze, aluminum, stainless steel, plastics, wood, and glass.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Cathedral Stone Products, Inc.
    - c. Dumond Chemicals, Inc.
- E. Abrasive Materials:
  - 1. Blasting Abrasive: Powdered aluminum silicate.
  - 2. Abrasives for Ferrous Metal Cleaning: Aluminum oxide paper, emery paper, fine steel wool, steel scrapers, and steel-wire brushes of various sizes.
- F. Rust Remover: Manufacturer's standard phosphoric acid-based gel formulation, also called "naval jelly," for removing corrosion from iron and steel.

### **2.2 PAINT REMOVERS**

- A. Covered or Skin-Forming Alkaline Paint Remover: Manufacturer's standard covered or skin-forming alkaline paste or gel formulation for removing paint from ferrous metal, and containing no methylene chloride.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Dumond Chemicals, Inc.
- B. Low-Odor, Solvent-Type-Paste Paint Remover: Manufacturer's standard low-odor, water-rinsable solvent-type paste, gel, or foamed emulsion formulation for removing paint from metals other than ferrous metal; and containing no methanol or methylene chloride.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.

- b. Cathedral Stone Products, Inc.
  - c. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
  - d. Dumond Chemicals, Inc.
- C. Covered, Solvent-Type-Paste Paint Remover: Manufacturer's standard, low-odor, covered, water-rinsable, solvent-type paste or gel formulation for removing paint from masonry; and containing no methanol or methylene chloride.
- 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Dumond Chemicals, Inc.

### 2.3 MISCELLANEOUS MATERIALS

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline cleaners. This masking agent does protect against paint removers.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Price Research, Ltd. dba Charles Paint Research.
- B. Masking Tape: Nonstaining, nonabsorbent material; compatible with chemical solutions being used and substrate surfaces; and that will easily come off entirely, including adhesive.
- C. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:
- 1. Previous effectiveness in performing the work involved.
  - 2. Little possibility of damaging exposed surfaces.
  - 3. Consistency of each application.
  - 4. Uniformity of the resulting overall appearance.
  - 5. Do not use products or tools that could do the following:
    - a. Remove, alter, or in any way harm the present or future condition of existing surfaces, including surrounding surfaces not in the Contract.
    - b. Leave an unintended residue on surfaces.

### 2.4 FERROUS METAL PRIMERS

- A. Repair Primer: Manufacturer's standard, rust-inhibiting, fast-curing, lead- and chromate-free, universal primer, compatible with firmly adhered existing paint and applied finish. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry-film thickness.
- B. Finish Primer: Primer complying with applicable requirements in Section 090190.52 "Maintenance Repainting" for finish painting of primed metal.

### **PART 3 - EXECUTION**

#### **3.1 PROTECTION**

- A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with materials that are proven to resist chemical solutions being used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
  - 2. Do not apply chemical solutions during winds of sufficient force to spread them to unprotected surfaces.
  - 3. Neutralize alkaline and acid wastes before disposal.
  - 4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

#### **3.2 DECORATIVE METAL CLEANING, GENERAL**

- A. Execution of the Work: In cleaning items, disturb them as minimally as possible and as follows:
  - 1. Remove deteriorated coatings and corrosion.
  - 2. Sequence work to minimize time before protective coatings are reapplied.
  - 3. Clean items in place unless otherwise indicated.
- B. Mechanical Coating Removal: Use gentle methods, such as scraping and wire brushing, that will not abrade metal substrate.
- C. Repaint: Where indicated, prepare painted decorative metal by cleaning surface, removing less than firmly adhered existing paint, sanding edges smooth, and priming for painting as specified.

#### **3.3 CLEANING**

- A. General: Use those methods indicated for each type of decorative metal and its location.
  - 1. Brushes: If using wire brushes, use brushes of same base metal composition as metal being treated. Use brushes that are resistant to chemicals being used.
  - 2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that spray methods do not damage surfaces.
    - a. Equip units with pressure gages.
    - b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.
    - c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.
    - d. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.

3. Uniformity: Perform each cleaning method in a manner that results in uniform coverage of all surfaces, including corners, contours, and interstices, and that produces an even effect without streaks or damaging surfaces.
  4. Protection: After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.
- B. Water Cleaning: Clean with cold water applied by low to medium pressure spray. Supplement with natural-fiber or plastic-bristle brush. Use small brushes to remove soil from joints and crevices.
- C. Detergent Cleaning:
1. Wet surface with cold water applied by low-pressure spray.
  2. Scrub surface with detergent solution and plastic-bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
  3. Rinse with cold water applied by low to medium pressure spray to remove detergent solution and soil.
- D. Nonacidic Liquid Chemical Cleaning: Apply chemical cleaner to surfaces according to chemical-cleaner manufacturer's written instructions.
1. Wet surface with hot water applied by low-pressure spray.
  2. Apply cleaner to surface in two applications by brush or low-pressure spray.
  3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
  4. Nonferrous Metals: Rinse with cold water applied by low to medium spray.
  5. Ferrous Metals: Do not rinse ferrous metals with water; neutralize chemical cleaner on ferrous metals as recommended in writing by manufacturer. Dry immediately with clean soft cloths. Follow direction of grain in metal.
- E. Cleaning with Abrasive Pads: Clean surfaces to remove dirt, leaving uniform patina intact, by light rubbing with abrasive pads and water. Rinse with cold water to remove residue. Apply rinse by low-pressure spray Do not rinse ferrous metals with water; wipe with damp cloths to remove residue.
- F. Chemical Rust Removal:
1. Remove loose rust scale with approved abrasives for ferrous metal cleaning.
  2. Apply rust remover with brushes or as recommended in writing by manufacturer.
  3. Allow rust remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing. Do not allow extended dwell time.
  4. Wipe off residue with mineral spirits and either steel wool or soft rags, or clean with method recommended in writing by manufacturer to remove residue.
  5. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
  6. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.
- G. Mechanical Rust Removal:
1. Remove rust with approved abrasives for ferrous metal cleaning.
  2. Wipe off residue with mineral spirits and either steel wool or soft rags.
  3. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
  4. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.

### 3.4 PAINT REMOVAL

- A. General: Use only those paint-removal methods indicated for each type of decorative metal.
1. Application: Apply paint removers according to paint-remover manufacturer's written instructions. Do not allow paint removers to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.
    - a. Apply materials to all surfaces, corners, contours, and interstices, to provide a uniform final appearance without streaks.
    - b. After work is complete, remove protection no longer required. Remove tape and adhesive marks.
  2. Brushes: If using wire brushes, use brushes of same base metal composition as metal being treated. Use brushes that are resistant to chemicals being used.
  3. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that spray methods do not damage surfaces.
    - a. Equip units with pressure gages.
    - b. Unless otherwise indicated, hold spray nozzle at least 6 inches from surface and apply material in horizontal, back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.
    - c. For chemical spray application, use low-pressure tank or chemical pump suitable for chemical indicated, equipped with cone-shaped spray.
    - d. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.
    - e. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.
- B. Paint Removal with Covered or Skin-Forming Alkaline Paint Remover:
1. Remove loose and peeling paint using water, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
  2. Apply paint remover to dry, painted metal with brushes or as recommended in writing by manufacturer.
  3. Apply cover according to manufacturer's written instructions.
  4. Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.
  5. Scrape off paint and remover.
  6. Rinse with hot water applied by [low to medium pressure spray to remove chemicals and paint residue.
  7. Do not rinse cast iron with water.
  8. Use mechanical methods recommended in writing by manufacturer to remove chemicals and paint residue.
  9. For spots of remaining paint, apply alkaline-paste paint remover according to "Paint Removal with Alkaline-Paste Paint Remover" Paragraph above.
- C. Paint Removal with Solvent-Type-Paste Paint Remover:
1. Remove loose and peeling paint using water, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
  2. Apply thick coating of paint remover to painted decorative metal with natural-fiber cleaning brush, deep-nap roller, or large paint brush. Apply in one or two coats according to manufacturer's written instructions.

3. Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.
  4. Rinse with hot water applied by low to medium pressure spray to remove chemicals and paint residue.
  5. Do not rinse cast iron with water.
  6. Use mechanical methods recommended in writing by manufacturer to remove chemicals and paint residue.
  7. Repeat process if necessary to remove all paint.
- D. Paint Removal with Covered, Solvent-Type-Paste Paint Remover:
1. Remove loose and peeling paint using water, scrapers, stiff brushes, or a combination of these. Let surface dry thoroughly.
  2. Apply paint remover to dry, painted decorative metal with natural-fiber cleaning brush, deep-nap roller, or large paint brush or as recommended in writing by manufacturer.
  3. Apply cover according to manufacturer's written instructions.
  4. Allow paint remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing.
  5. Scrape off paint and remover.
  6. Rinse with hot water applied by low to medium-pressure spray to remove chemicals and paint residue.
  7. Do not rinse cast iron with water.
  8. Use mechanical methods recommended in writing by manufacturer to remove remaining chemicals and paint residue.

### **3.5 PRIMING**

- A. Repair Primer: Apply immediately after completing a repair.
- B. Finish Primer: Apply as soon after cleaning as possible.

### **3.6 DECORATIVE METAL CLEANING SCHEDULE**

- A. Treatment for Decorative Railing : Wrought-iron railing..
  1. General: Perform work in the field.
  2. Paint Removal: Covered or skin-forming alkaline paint remover.
  3. Repairs: As specified in Section 050170.61 "Decorative Metal Repair."
  4. Painted Finish: As specified in Section 090190.52 "Maintenance Repainting."

**END OF SECTION 050170.51**



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**SECTION 050170.61**

**DECORATIVE METAL REPAIR**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Decorative metal repairs as follows:
    - a. Repairing metal and replacing damaged and missing components in place.
    - b. Removing metal for shop repair and replacement of components; reinstalling repaired metal.
    - c. Installing wood rails supported by or attached to decorative metal railings or brackets.
- B. Related Requirements:
  - 1. Section 013516 "Alteration Project Procedures" for general remodeling, renovation, repair, and maintenance requirements.

**1.3 DEFINITIONS**

- A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm
- B. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include recommendations for product application and use.
  - 2. Include test data substantiating that products comply with requirements.
- B. Shop Drawings:
  - 1. Include plans, elevations, and sections showing locations and extent of repair and replacement work, with enlarged details of replacement parts indicating materials, profiles, methods of attachment, accessory items, and finishes.
  - 2. Include field-verified dimensions and the following:
    - a. Identification of each new metal item and component and its location on the structure in annotated plans and elevations.
    - b. Provisions for expansion, weep holes, and conduits as required for each location and exposure.
    - c. Provisions for sealant joints if required.
- C. Samples for Initial Selection: For the following:
  - 1. Each type of decorative metal item and component with applied finishes.

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2. Sealant materials.
  3. Accessories to verify color selection.
- D. Samples for Verification: For the following products in manufacturer's standard sizes unless otherwise indicated, finished as required for use in the Work:
1. Each type of new material to be used for replacing existing or missing decorative metal; 6 inches long in least dimension or whole item.
  2. Fittings and brackets.
  3. Each type of exposed connection between components. Show method of finishing components at connections.
  4. Each type of exposed finish prepared on metal of the same alloy to be used for the Work of this Section; 6 inches long in least dimension.
  5. Sealant materials.
  6. Accessories: Each type of anchor, accessory, and miscellaneous support in required finishes.

### **1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For decorative metal repair specialist.
- B. Evaluation Reports: For post-installed structural anchors, from ICC-ES.

### **1.6 QUALITY ASSURANCE**

1. Single Specialist: Subject to compliance with requirements, engage the same specialist firm to perform the work of Section 050170.51 "Decorative Metal Cleaning" and Section 050170.63 "Decorative Metal Refinishing" and the work of this Section.

### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Pack, deliver, and store decorative metal items in suitable packs, heavy-duty cartons, or wooden crates; surround with sufficient packing material to ensure that products are not deformed, cracked, or otherwise damaged.
- B. Store decorative metal inside a well-ventilated area, away from uncured concrete and masonry and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.
- C. Protect strippable protective covering on decorative metal from exposure to sunlight and high humidity, except to the extent necessary for the period of decorative metal installation.

### **1.8 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with decorative metal repairs only when existing and forecasted weather conditions are within the environmental limits set by each manufacturer's written instructions and specified requirements.

## **PART 2 - PRODUCTS**

### **2.1 METAL MATERIALS**

- A. General: Provide decorative metal materials made of the alloys, forms, and types that match existing metals and have the ability to receive finishes matching existing finishes unless otherwise indicated. Exposed-to-view surfaces exhibiting imperfections inconsistent with existing materials are unacceptable.

- B. Source Limitation for Replacement Cast Materials: Obtain castings for decorative metal repair from single source from single manufacturer with resources to provide materials of consistent quality in appearance and physical properties.
- C. Aluminum: Alloy and temper recommended in writing by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required:
  - 1. Extruded Bars and Shapes: ASTM B221, Alloy 6063-T6.
  - 2. Extruded Structural Pipe and Tubes: ASTM B429/B429M, Alloy 6063-T6.
  - 3. Drawn General-Purpose Seamless Tubes: ASTM B210, Alloy 6063-T832.
  - 4. Plate and Sheet: ASTM B209, Alloy 6061-T6.
  - 5. Die and Hand Forgings: ASTM B247, Alloy 6061-T6.
  - 6. Castings: ASTM B26/B26M, Alloy A356-T6.
- D. Steel: Standard and grade designated below for each form required:
  - 1. Tubing: Cold formed, ASTM A500/A500M.
  - 2. Steel Plate, Shapes, and Bars: ASTM A36/A36M.
  - 3. Steel Bars: Mild steel; ASTM A29/A29M, Grade 1010.
  - 4. Steel Sheet: ASTM A1008/A1008M, cold-rolled commercial steel sheet; matte finish; suitable for exposed applications.
- E. Cast Iron: Standard designated below for each type of casting:
  - 1. Gray-Iron Castings: ASTM A48/A48M, Class 30.
  - 2. Malleable-Iron Castings: ASTM A47/A47M, grade as recommended in writing by fabricator for type of use indicated.
- F. Wrought Iron: Mild steel; ASTM A29/A29M, Grade 1010 hand worked or machine forged to the form indicated.

## **2.2 PREPARATORY CLEANING MATERIALS**

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F.
- C. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
- D. Abrasive Materials:
  - 1. Abrasive Pads for Copper-Alloy Cleaning: Extra-fine bronze wool or plastic abrasive pads.
  - 2. Blasting Abrasive: Powdered aluminum silicate.
  - 3. Abrasives for Ferrous Metal Cleaning: Aluminum oxide paper, emery paper, fine steel wool, steel scrapers, and steel-wire brushes of various sizes.
- E. Rust Remover: Manufacturer's standard phosphoric acid-based gel formulation, also called "naval jelly," for removing corrosion from iron and steel.

## **2.3 FASTENERS**

- A. Fasteners: Fasteners of the same basic metal as fastened metal unless otherwise indicated. Use metals that are noncorrosive and compatible with each metal joined.

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1. Match existing fasteners in material and in type of fastener unless otherwise indicated.
  2. Use concealed fasteners for interconnecting decorative metal components and for attaching them to other work unless exposed fasteners are unavoidable or the existing fastening method.
  3. For exposed fasteners, use Phillips-type machine screws of head profile flush with metal surface unless otherwise indicated.
  4. Finish heads of exposed fasteners to match finish of metal fastened unless otherwise indicated.
- B. Anchors, General: Use bolt heads of same basic metal as fastened metal unless otherwise indicated. Use metals that are noncorrosive and compatible with each metal anchored.
- C. Post-Installed Structural Anchors: Fastener systems; with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES [AC58] AC308 as appropriate for the substrate.
1. Uses: Securing railings and handrails to concrete.
  2. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
- D. Post-Installed Nonstructural Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC58 or AC308 as appropriate for the substrate.
1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.

## 2.4 MISCELLANEOUS MATERIALS

- A. Welding Electrodes and Filler Metal: Select according to AWS specifications for metal alloy welded; use metal type and alloy as recommended in writing by producer of metal to be welded or filled and as required for color match, strength, and compatibility in fabricated items.
- B. Brazing Rods for Cast-Iron Components: Type and alloy as recommended in writing by brazing-rod manufacturer and as required for strength and compatibility in fabricated items.
- C. Metal-Patching Compound: Two-part, polyester-resin metal-patching compound; knife-grade formulation as recommended in writing by manufacturer for type of metal repair indicated, tooling time required for the detail of work, and site conditions. Compound shall be produced for filling metal that has deteriorated because of corrosion. Filler shall be capable of filling deep holes and spreading to feather edge.
- D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended in writing by manufacturer for interior and exterior applications.
- E. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
1. Water-Resistant Product: At exterior locations and where indicated, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended in writing by manufacturer for exterior use.
- F. Sealant Materials:

1. Provide manufacturer's standard, elastomeric single-component, nonsag, neutral-curing silicone, single-component, nonsag urethane > sealant complying with applicable requirements in Section 079200 "Joint Sealants."
  2. Colors: Provide colors of exposed sealants to match colors of metals in which sealant is placed unless otherwise indicated.
- G. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline cleaners.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Price Research, Ltd. dba Charles Paint Research.
- H. Masking Tape: Nonstaining, nonabsorbent material; compatible with chemical solutions being used and substrate surfaces, and that will easily come off entirely, including adhesive.
- I. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:
1. Previous effectiveness in performing the work involved.
  2. Little possibility of damaging exposed surfaces.
  3. Consistency of each application.
  4. Uniformity of the resulting overall appearance.
  5. Do not use products or tools that could do the following:
    - a. Remove, alter, or in any way harm the present or future condition of existing surfaces, including surrounding surfaces not in the Contract.
    - b. Leave an unintended residue on surfaces.

## 2.5 METAL FABRICATION

- A. Fabricate repairs of decorative metal items and components in sizes and profiles to match existing decorative metal, with accurate curves, lines, and angles. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
- B. Provide uniform, neat seams with minimum exposure of welds, brazing, solder, and sealant.
- C. Provide rebates, lugs, and brackets necessary to assemble components and to attach to existing work. Drill and tap for fasteners. Use concealed fasteners where possible; use exposed fasteners to match existing work.
- D. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed joints of flux, and dress exposed and contact surfaces.
  1. Use materials and methods that match color of base metal, minimize distortion, and develop maximum strength and corrosion resistance.
  2. Remove flux immediately.
  3. At exposed connections, match contours of adjoining surfaces, and finish exposed surfaces smooth and blended so no roughness shows after finishing.

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- E. Castings: Fabricate castings free of warp, cracks, blowholes, or other defects that impair strength or appearance. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks.
  - 1. Finish castings to match existing decorative metalwork.
  - 2. Replacement Casting for Handrail Bracket: Duplicate existing handrail bracket on the cast-iron railing of first-floor stairs in the lobby. Make molds from this bracket to create new cast-iron brackets.

## **2.6 FINISHES, GENERAL**

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## **2.7 ALUMINUM FINISHES**

- A. Mill finish.
- B. Clear Anodic Finish: AAMA 611 Class II, 0.010 mm or thicker over a satin (directionally textured) mechanical finish.
- C. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, application, and baking.

## **2.8 FERROUS METAL FINISHES**

- A. Repair Primer: Manufacturer's standard, rust-inhibiting, fast-curing, lead- and chromate-free universal primer, compatible with firmly adhered existing paint and applied finish. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.
- B. Finish Primer: Primer complying with applicable requirements in Section 090190.52 "Maintenance Repainting" for finish painting of primed existing metal.
- C. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry film thickness.

## **PART 3 - EXECUTION**

### **3.1 PROTECTION**

- A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with materials that are proved to resist chemical solutions being used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents to comply with

manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.

2. Do not apply chemical solutions during winds of enough force to spread them to unprotected surfaces.
3. Neutralize alkaline and acid wastes before disposal.
4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

### **3.2 DECORATIVE METAL REPAIR, GENERAL**

- A. Repair Appearance Standard: Repaired surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.
- B. Execution of the Work: In repairing items, disturb remaining existing work as minimally as possible and as follows:
  1. Stabilize decorative metal to reestablish structural integrity and weather resistance while maintaining the existing form of each item.
  2. Remove deteriorated coatings and corrosion.
  3. Sequence work to minimize time before protective coatings are reapplied.
  4. Repair items where stabilization is insufficient to stop progress of deterioration.
  5. Repair items in place where possible.
  6. Replace or reproduce items where indicated or scheduled.
  7. Install temporary protective measures to stabilize decorative metal that is indicated to be repaired later.
- C. Mechanical Coating Removal: Use gentle methods, such as scraping and wire brushing, that will not abrade metal substrate.
- D. Repair Decorative Metal Item: Match existing materials and features.
  1. Repair decorative metals by patching, piecing-in, splicing, or otherwise reinforcing metals with new metal matching existing metal.
- E. Replace Decorative Metal Component: Where indicated, duplicate and replace items with new metal matching existing metal.
  1. Replace heavily deteriorated or missing parts or features of decorative metal with compatible materials, using surviving prototypes to create patterns or molds for duplicate replacements.

### **3.3 PREPARATORY CLEANING**

- A. General: Use those methods indicated for each type of decorative metal and its location.
  1. Brushes: If using wire brushes, use brushes of same base metal composition as metal being cleaned. Use brushes that are resistant to chemicals being used.
  2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that spray methods do not damage surfaces.
    - a. Equip units with pressure gages.
    - b. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.



- c. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.
  3. Uniformity: Perform each cleaning method in a manner that results in uniform coverage of all surfaces, including corners, contours, and interstices, and that produces an even effect without streaks or damaging surfaces.
  4. Protection: After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.
- B. Water Cleaning: Clean with cold water applied by low to medium pressure spray. Supplement with plastic-bristle brush. Use small brushes to remove soil from joints and crevices.
- C. Detergent Cleaning:
  1. Wet surface with cold water applied by low-pressure spray.
  2. Scrub surface with detergent solution and plastic-bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
  3. Rinse with cold water applied by low to medium pressure spray to remove detergent solution and soil.
- D. Cleaning with Abrasive Pads: Clean surfaces to remove dirt by light rubbing with abrasive pads and water. Rinse with cold water to remove residue. Apply rinse by low-pressure spray. Do not rinse ferrous metals with water; wipe with damp cloths to remove residue.
- E. Chemical Rust Removal:
  1. Remove loose rust scale with approved abrasives for ferrous metal cleaning.
  2. Apply rust remover with brushes or as recommended in writing by manufacturer.
  3. Allow rust remover to remain on surface for period recommended in writing by manufacturer or as determined by preconstruction testing. Do not allow extended dwell time.
  4. Wipe off residue with mineral spirits and either steel wool or soft rags, or clean with method recommended in writing by manufacturer to remove residue.
  5. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
  6. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.
- F. Mechanical Rust Removal:
  1. Remove rust with approved abrasives for ferrous metal cleaning.
  2. Wipe off residue with mineral spirits and either steel wool or soft rags.
  3. Dry immediately with clean, soft cloths. Follow direction of grain in metal.
  4. Prime immediately to prevent rust. Do not touch cleaned metal surface until primed.

### **3.4 REMOVAL, REPAIR, AND REINSTALLATION**

- A. General: Perform removal work as required in Section 024119 "Selective Demolition" for specific requirements relating to selectively demolishing construction, including decorative metal removal for repair or reinstallation elsewhere.
- B. Defects in Painted Metal Surfaces: Repair nonload-bearing defects in existing metal surfaces, including dents and gouges more than 1/8 inch deep or 1/2 inch across, and all holes and cracks by filling with metal-patching compound and sanding smooth. Remove burrs and protruding fasteners. Prime iron and steel surfaces immediately after repair to prevent flash rusting.

- C. Reinstalling Railing Posts: After posts have been inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions. Leave anchorage joint exposed, wipe off surplus anchoring material, and leave 1/8-inch buildup sloped away from post.
- D. Installing Sealant:
  - 1. After metal reinstallation, keep joints to receive sealant dry and free of debris.
  - 2. Clean and prepare joint surfaces according to Section 079200 "Joint Sealants." Prime joint surfaces unless sealant manufacturer recommends against priming. Do not allow primer to spill or migrate onto adjoining surfaces.
  - 3. Fill sealant joints with specified joint sealant as recommended in writing by sealant manufacturer and according to Section 079200 "Joint Sealants" and the following:
    - a. Install sealant using only proved installation methods that ensure sealant is deposited in a uniform, continuous ribbon, without gaps or air pockets, and with complete wetting of the joint bond surfaces equally on both sides. Fill joint flush with surrounding metal.
    - b. Do not allow sealant to overflow or spill onto adjoining surfaces or to migrate into the voids of adjoining surfaces, particularly rough or sculptural textures. Promptly remove excess and spillage of sealant as the work progresses. Clean adjoining surfaces by means necessary to eliminate evidence of spillage, without damage to adjoining surfaces or finishes, as demonstrated in an approved mockup.
  - 4. Cure sealant according to Section 079200 "Joint Sealants."

### **3.5 PRIMING**

- A. Repair Primer: Apply immediately after completing a repair.
- B. Finish Primer: Apply as soon after cleaning as possible.
- C. .

### **3.6 DECORATIVE METAL REPAIR SCHEDULE**

- A. Treatment for Decorative Railing Wrought-iron railing.
  - 1. General: Perform work in the field.
  - 2. Paint Removal: As specified in Section 050170.51 "Decorative Metal Cleaning."
  - 3. Repairs: Repair railing and replace missing components with hand-worked steel bars.
    - a. Apply repair primer immediately after repair.
  - 4. Painted Finish: As specified in Section 090190.52 "Maintenance Repainting."

**END OF SECTION 050170.61**

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**SECTION 050170.63**

**DECORATIVE METAL REFINISHING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes refinishing bare decorative metal surfaces as follows:
  - 1. Refinishing metal in place.
  - 2. Removing metal for shop refinishing; reinstalling refinished metal.
  - 3. Integral metal finishes.
  - 4. Clear protective coatings.
- B. Related Requirements:
  - 1. Section 013516 "Alteration Project Procedures" for general remodeling, renovation, repair, and maintenance requirements.

**1.3 DEFINITIONS**

- A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
- B. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include recommendations for product application and use.
  - 2. Include test data substantiating that products comply with requirements.
- B. Shop Drawings:
  - 1. Include plans, elevations, and sections showing locations and extent of refinishing work.
  - 2. Include field-verified dimensions.
- C. Samples for Initial Selection: For the following:
  - 1. A range of each type of exposed finish prepared on metal of the same alloy matching existing metal.
- D. Samples for Verification: For the following products in manufacturer's standard sizes unless otherwise indicated, finished as required for use in the Work:
  - 1. Each type of exposed finish prepared on metal of the same alloy matching existing metal; 6 inches long in least dimension.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For decorative metal refinishing specialist.

**1.6 QUALITY ASSURANCE**

- A. Decorative Metal Refinishing Specialist Qualifications: A qualified decorative metal refinishing specialist.
  - 1. Single Specialist: Subject to compliance with requirements, engage the same specialist firm to perform the work of Section 050170.51 "Decorative Metal Cleaning", Section 050170.61 "Decorative Metal Repair" and the work of this Section.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Pack, deliver, and store decorative metal items in suitable packs, heavy-duty cartons, or wooden crates; surround with sufficient packing material to ensure that products are not deformed, cracked, or otherwise damaged.
- B. Store decorative metal inside a well-ventilated area, away from uncured concrete and masonry and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.
- C. Protect strippable protective covering on decorative metal from exposure to sunlight and high humidity, except to the extent necessary for the period of decorative metal installation.

**1.8 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with decorative metal refinishing only when existing and forecasted weather conditions are within the environmental limits set by each manufacturer's written instructions and specified requirements.

**PART 2 - PRODUCTS**

**2.1 PREPARATORY CLEANING MATERIALS**

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F.
- C. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
- D. Nonacidic Liquid Chemical Cleaner: Manufacturer's standard mildly alkaline liquid cleaner, formulated for removing organic soiling from ordinary building materials, including polished stone, brick, copper, brass, bronze, aluminum, stainless steel, plastics, wood, and glass.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Cathedral Stone Products, Inc.
    - c. Dumond Chemicals, Inc.
- E. Abrasive Materials:

1. Abrasive Pads for Copper-Alloy Cleaning: Extra-fine bronze wool or plastic abrasive pads.
2. Blasting Abrasive: Powdered aluminum silicate. Revise "Abrasives for Ferrous Metal Cleaning" Subparagraph below if mechanically cleaning stainless-steel surfaces; allow only stainless-steel tools. Carbon-steel residues can rust and stain stainless-steel surfaces.
3. Abrasives for Ferrous Metal Cleaning: Aluminum oxide paper, emery paper, fine steel wool, steel scrapers, and steel-wire brushes of various sizes.

## **2.2 MISCELLANEOUS MATERIALS**

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of acidic and alkaline cleaners.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Building Restoration Products, Inc.
    - b. Price Research, Ltd. dba Charles Paint Research.
- B. Masking Tape: Nonstaining, nonabsorbent material; compatible with chemical solutions being used and substrate surfaces, and that will easily come off entirely, including adhesive.
- C. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:
  1. Previous effectiveness in performing the work involved.
  2. Little possibility of damaging exposed surfaces.
  3. Consistency of each application.
  4. Uniformity of the resulting overall appearance.
  5. Do not use products or tools that could do the following:
    - a. Remove, alter, or in any way harm the present or future condition of existing surfaces, including surrounding surfaces not in the Contract.
    - b. Leave an unintended residue on surfaces.

## **2.3 FINISHES, GENERAL**

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## **2.4 ALUMINUM FINISHES**

- A. Unfinished: No applied finish; only preparatory cleaning.
- B. Clear Anodic Finish: AAMA 611, Class II, 0.010 mm or thicker over a satin (directionally textured)mechanical finish.

### **PART 3 - EXECUTION**

#### **3.1 PROTECTION**

- A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with materials that are proved to resist chemical solutions being used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
  - 2. Do not apply chemical solutions during winds of enough force to spread them to unprotected surfaces.
  - 3. Neutralize alkaline and acid wastes before disposal.
  - 4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

#### **3.2 DECORATIVE METAL REFINISHING, GENERAL**

- A. Refinishing Appearance Standard: Refinished surfaces are to have a uniform appearance as viewed from 20 feet > away by Architect.
- B. Execution of the Work: In refinishing items, disturb remaining existing work as minimally as possible and as follows:
  - 1. Remove dirt and corrosion.
  - 2. Sequence work to minimize time before protective coatings are reapplied.
  - 3. Refinish items in place where possible and according to required appearance.
- C. Repair Finish of Decorative Metal Item: Restore areas of deteriorated or missing finish on item and blend restored finish with existing, adjacent finish.

#### **3.3 PREPARATORY CLEANING**

- A. General: Use those methods indicated for each type of decorative metal and its location.
  - 1. Brushes: If using wire brushes, use brushes of same base metal composition as metal being treated. Use brushes that are resistant to chemicals being used.
  - 2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that spray methods do not damage surfaces.
    - a. Equip units with pressure gages.
    - b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.
    - c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.
    - d. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.

3. Uniformity: Perform each cleaning method in a manner that results in uniform coverage of all surfaces, including corners, contours, and interstices, and that produces an even effect without streaks or damaging surfaces.
  4. Protection: After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.
- B. Water Cleaning: Clean with cold water applied by low to medium pressure spray. Supplement with plastic-bristle brush. Use small brushes to remove soil from joints and crevices.
- C. Detergent Cleaning:
1. Wet surface with cold water applied by low-pressure spray.
  2. Scrub surface with detergent solution and plastic-bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
  3. Rinse with cold water applied by low to medium pressure spray to remove detergent solution and soil.
- D. Nonacidic Liquid Chemical Cleaning: Apply chemical cleaner to surfaces according to chemical-cleaner manufacturer's written instructions.
1. Wet surface with hot water applied by low-pressure spray.
  2. Apply cleaner to surface in two applications by brush or low-pressure spray.
  3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
  4. Nonferrous Metals: Rinse with cold water applied by low to medium pressure spray to remove chemicals and soil.
  5. Ferrous Metals: Do not rinse ferrous metals with water; neutralize chemical cleaner on ferrous metals as recommended in writing by manufacturer. Dry immediately with clean soft cloths. Follow direction of grain in metal.
- E. Cleaning with Abrasive Pads: Clean surfaces to remove dirt, leaving uniform patina intact, by light rubbing with abrasive pads and water. Rinse with cold water to remove residue. Apply rinse by low-pressure spray. Do not rinse ferrous metals with water; wipe with damp cloths to remove residue.

### **3.4 REMOVAL, REPAIR, AND REINSTALLATION**

- A. General: Perform removal, repair, and reinstallation work as required in Section 024119 "Selective Demolition" and Section 050170.61 "Decorative Metal Repair."

**END OF SECTION 050170.63**



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**SECTION 051200  
STRUCTURAL STEEL**

**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 the following:
  - 1. Structural steel.
  - 2. Grout.
- B. Related Sections include the following:
  - 1. Division 5 Section "Steel Deck" for field installation of shear connectors.
  - 2. Division 5 Section "Metal Fabrications" for steel lintels or shelf angles not attached to structural-steel frame miscellaneous steel fabrications and other metal items not defined as structural steel.

1.3 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.

1.4 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand ASD-service loads indicated and comply with other information and restrictions indicated.
  - 1. Select and complete connections using schematic details indicated and AISC's "Manual of Steel Construction, Allowable Stress Design," Part 4.
- B. Construction: Type 2, simple framing.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication of structural-steel components.
  - 1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
  - 2. Include embedment drawings.

3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
  4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
- C. Welding certificates.
- D. Qualification Data: For fabricator.
- E. Mill Test Reports: Signed by manufacturers certifying that the following products comply with requirements:
1. Structural steel including chemical and physical properties.
  2. Bolts, nuts, and washers including mechanical properties and chemical analysis.
  3. Nonsrink grout.
- F. Source quality-control test reports.

#### 1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category Sbd.
- B. Shop-Painting Applicators: Qualified according to SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."
- C. Welding: 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's "Code of Standard Practice for Steel Buildings and Bridges."
  2. AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2."
  3. AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
  4. AISC's "Specification for the Design of Steel Hollow Structural Sections."
  5. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.
  2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.8 COORDINATION

- A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

**PART 2 - PRODUCTS**

2.1 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A 992/A 992M.
- B. Channels, Angles, M, S-Shapes: ASTM A 36/A 36M.
- C. Plate and Bar: ASTM A 36/A 36M.
- D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade C, structural tubing.
- E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
  - 1. Weight Class: as indicated
- F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM F3125 Grade A325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
  - 1. Finish: Plain.
- B. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
  - 1. Configuration: Hooked.
  - 2. Nuts: ASTM A 563 heavy hex carbon steel.
  - 3. Plate Washers: ASTM A 36/A 36M carbon steel.
  - 4. Washers: ASTM F 436 hardened carbon steel.
  - 5. Finish: Plain.
- C. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.
  - 1. Nuts: ASTM A 563 heavy hex carbon steel.
  - 2. Plate Washers: ASTM A 36/A 36M carbon steel.
  - 3. Washers: ASTM F 436 hardened carbon steel.
  - 4. Finish: Plain.
- D. Threaded Rods: ASTM A 193/A 193M.
  - 1. Nuts: ASTM A 563 heavy hex carbon steel.
  - 2. Washers: ASTM A 36/A 36M carbon steel.

3. Finish: Plain.

## 2.3 PRIMER

- A. Primer: SSPC-Paint 25, Type II, iron oxide, zinc oxide, raw linseed oil, and alkyd.
- B. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer.
- C. Galvanizing Repair Paint: ASTM A 780.

## 2.4 GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

## 2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
  1. Camber structural-steel members where indicated.
  2. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.
  3. Mark and match-mark materials for field assembly.
  4. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
  1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning."
- F. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.
  1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
  2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
  3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

## 2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
  - 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
  - 1. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
  - 2. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
    - a. Grind butt welds flush.
    - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.

## 2.7 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 to be high-strength bolted with slip-critical connections.
  - 4. Surfaces to receive sprayed fire-resistive materials.
  - 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."
- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

## 2.8 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.
  - 1. Fill vent holes and grind smooth after galvanizing.
  - 2. Galvanize lintels shelf angles attached to structural-steel frame and located in exterior walls.

## 2.9 SOURCE QUALITY CONTROL

- A. Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
  - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

### 3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design."
- B. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting base and bearing plates. Clean bottom surface of base and bearing plates.
  - 1. Set base and bearing plates for structural members on wedges, shims, or setting nuts as required.
  - 2. Weld plate washers to top of base plate.
  - 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 base or bearing plate before packing with grout.

4. Promptly pack grout solidly between bearing surfaces and base or bearing 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's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
  1. Level and plumb individual members of structure.
  2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.
- E. Splice members only where indicated.
- F. Remove erection bolts on welded, architecturally exposed structural steel; fill holes with plug welds; and grind smooth at exposed surfaces.
- G. Do not use thermal cutting during erection unless approved by Architect. Finish thermally cut sections within smoothness limits in AWS D1.1.
- H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

### 3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
  1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work.
  1. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.
  2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
  3. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.
  4. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent weld show-through on exposed steel surfaces.
    - a. Grind butt welds flush.
    - b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.



3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.
- B. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using High-Strength Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.6 REPAIRS AND PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories, bearing plates, and abutting structural steel.
  - 1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
  - 2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.
- C. Touchup Painting: Cleaning and touchup painting are specified in Division 9 painting Sections.

END OF SECTION 051200

**SECTION 052100  
STEEL JOISTS**

**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 the following:

- 1. K-series steel joists.
- 2. K-series steel joist substitutes.
- 3. KCS-series steel joist.
- 4. Joist accessories.

- B. Related Sections include the following:

- 1. Division 3 Section "Cast-in-Place Concrete" for installing bearing plates in concrete.
- 2. Division 4 Section "Unit Masonry Assemblies" for installing bearing plates in unit masonry.

1.3 DEFINITIONS

- A. SJI "Specifications": Steel Joist Institute's "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."
- B. Special Joists: Steel joists or joist girders requiring modification by manufacturer to support nonuniform, unequal, or special loading conditions that invalidate load tables in SJI's "Specifications."

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide special joists and connections capable of withstanding design loads indicated.
- B. Design special joists to withstand design loads with live load deflections no greater than the following:
  - 1. Floor Joists: Vertical deflection of 1/360 of the span.
  - 2. Roof Joists: Vertical deflection of 1/360 of the span.

1.5 SUBMITTALS

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

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- B. Shop Drawings: Show layout, designation, number, type, location, and spacings of joists. Include joining and anchorage details, bracing, bridging, joist accessories; splice and connection locations and details; and attachments to other construction.
  - 1. Indicate locations and details of bearing plates to be embedded in other construction.
  - 2. Comprehensive engineering analysis of special joists signed and sealed by the qualified professional engineer responsible for its preparation.
- C. Welding certificates.
- D. Manufacturer Certificates: Signed by manufacturers certifying that joists comply with requirements.
- E. Mill Certificates: Signed by bolt manufacturers certifying that bolts comply with requirements.
- F. Qualification Data: For manufacturer.
- G. Field quality-control test and inspection reports.
- H. Research/Evaluation Reports: For joists.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables of SJI "Specifications."
  - 1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.
- B. SJI Specifications: Comply with standard specifications in SJI's "Specifications" that are applicable to types of joists indicated.
- C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle joists as recommended in SJI's "Specifications."
- B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.

1.8 SEQUENCING

- A. Deliver steel bearing plates to be built into masonry construction.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Steel: Comply with SJI's "Specifications" for web and steel-angle chord members.
- B. Steel Bearing Plates: ASTM A 36/A 36M.
- C. High-Strength Bolts, Nuts, and Washers: ASTM F3125 Grade A325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
  - 1. Finish: Plain.
- D. Welding Electrodes: Comply with AWS standards.
- E. Galvanizing Repair Paint: MPI#18, MPI#19, or SSPC-Paint 20.

### 2.2 PRIMERS

- A. Primer: SSPC-Paint 15, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.

### 2.3 K-SERIES STEEL JOISTS

- A. Manufacture steel joists of type indicated according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.
  - 1. Joist Type: K-series steel joists.
- B. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.
- C. Comply with AWS requirements and procedures for shop welding, appearance, quality of welds, and methods used in correcting welding work.
- D. Provide holes in chord members for connecting and securing other construction to joists.
- E. Top-Chord Extensions: Extend top chords of joists with SJI's Type S top-chord extensions where indicated, complying with SJI's "Specifications."
- F. Extended Ends: Extend bearing ends of joists with SJI's Type R extended ends where indicated, complying with SJI's "Specifications."
- G. Camber joists according to SJI's "Specifications."
- H. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

## 2.4 JOIST ACCESSORIES

- A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.
- B. Bridging: Schematically indicated. Detail and fabricate according to SJI's "Specifications." Furnish additional erection bridging if required for stability.
- C. Bridging: Fabricate as indicated and according to SJI's "Specifications." Furnish additional erection bridging if required for stability.
- D. Fabricate steel bearing plates with integral anchorages of sizes and thicknesses indicated. Hot-dip zinc coat according to ASTM A 123/A 123M.
- E. Steel bearing plates with integral anchorages are specified in Division 5 Section "Metal Fabrications."
- F. Supply ceiling extensions, either extended bottom-chord elements or a separate extension unit of enough strength to support ceiling construction. Extend ends to within 1/2 inch of finished wall surface, unless otherwise indicated.
- G. Supply miscellaneous accessories, including splice plates and bolts required by joist manufacturer to complete joist installation.

## 2.5 CLEANING AND SHOP PAINTING

- A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories by hand-tool cleaning, SSPC-SP 2.
- B. Apply 1 coat of shop primer to joists and joist accessories to be primed to provide a continuous, dry paint film not less than 1 mil thick.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine supporting substrates, embedded bearing plates, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Do not install joists until supporting construction is in place and secured.
- B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's written recommendations, and requirements in this Section.

1. Before installation, splice joists delivered to Project site in more than one piece.
  2. Space, adjust, and align joists accurately in location before permanently fastening.
  3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
  4. Delay rigidly connecting bottom-chord extensions to columns or supports until dead loads have been applied.
- C. Field weld joists to supporting steel bearing plates and framework. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
- D. Bolt joists to supporting steel framework using high-strength structural bolts. Comply with RCSC's "Specification for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts" for high-strength structural bolt installation and tightening requirements.
- E. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

### 3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and bolted connections and to perform field tests and inspections and prepare test and inspection reports.
- B. Field welds will be visually inspected according to AWS D1.1/D1.1M.
- C. Bolted connections will be visually inspected.
- D. High-strength, field-bolted connections will be tested and verified according to procedures in RCSC's "Specification for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts."
- E. Correct deficiencies in Work that test and inspection reports have indicated are not in compliance with specified requirements.
- F. Additional testing will be performed to determine compliance of corrected Work with specified requirements.

### 3.4 REPAIRS AND PROTECTION

- A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists, bearing plates, abutting structural steel, and accessories.
1. Clean and prepare surfaces by hand-tool cleaning, SSPC-SP 2, or power-tool cleaning, SSPC-SP 3.
  2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

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- C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that joists and accessories are without damage or deterioration at time of Substantial Completion.

END OF SECTION 052100

**SECTION 053100  
STEEL DECKING**

**PART 1 - GENERAL**

1.1 SUMMARY

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

1.2 ACTION SUBMITTALS

- A. Product Data:
1. Roof deck.
  2. Composite floor deck.
- B. Shop Drawings:
1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

1.3 INFORMATIONAL SUBMITTALS

- A. Certificates:
1. Welding certificates.
  2. Product Certificates: For each type of steel deck.
- B. Test and Evaluation Reports:
1. Product Test Reports: For tests performed by a qualified testing agency, indicating that power-actuated mechanical fasteners comply with requirements.
  2. Research Reports: For steel deck, from ICC-ES showing compliance with the building code.
- C. Field Quality-Control Submittals:
1. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Qualifications:
1. Welding Qualifications: Qualify procedures and personnel in accordance with SDI QA/QC and the following welding code:



- a. AWS D1.3/D1.3M.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store products in accordance with SDI MOC3. 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

### 2.1 PERFORMANCE REQUIREMENTS

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck in accordance with AISI S100.

### 2.2 ROOF DECK

- A. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with SDI RD and with the following:
  1. Galvanized-Steel Sheet: ASTM A653/A653M, Structural Steel (SS), G60 zinc coating.
  2. Deck Profile: As indicated.
  3. Profile Depth: As indicated.
  4. Design Uncoated-Steel Thickness: As indicated.
  5. Span Condition: As indicated.
  6. Side Laps: Overlapped.

### 2.3 COMPOSITE FLOOR DECK

- A. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with SDI C, with the minimum section properties indicated, and with the following:
  1. Galvanized-Steel Sheet: ASTM A653/A653M, Structural Steel (SS), Grade 33, G60 zinc coating.
  2. Profile Depth: As indicated.
  3. Design Uncoated-Steel Thickness: As indicated.
  4. Span Condition: As indicated.

### 2.4 ACCESSORIES

- A. Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI standards for overhang and slab depth.
- G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.
- H. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0747 inch thick, with factory-punched hole of 3/8-inch minimum diameter.
- I. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.
- J. Galvanizing Repair Paint: ASTM A780/A780M.
- K. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION, GENERAL**

- A. Install deck panels and accessories in accordance with SDI C, SDI NC, and SDI RD, as applicable; manufacturer's written instructions; and requirements in this Section.
- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install in accordance with deck manufacturer's written instructions.

### 3.2 INSTALLATION OF FLOOR DECK

- A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:
  - 1. Weld Diameter: 5/8 inch, nominal.
  - 2. Weld Spacing: Space and locate welds as indicated.
  - 3. Weld Washers: Install weld washers at each weld location
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of one-half of the span or 36 inches, and as follows:
  - 1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
- C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
  - 1. End Joints: Lapped or butted at Contractor's option.
- D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure in accordance with SDI recommendations unless otherwise indicated.
- E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, in accordance with SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

### 3.3 REPAIR

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint in accordance with ASTM A780/A780M and manufacturer's written instructions.

### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Tests and Inspections:
  - 1. Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck in accordance with quality-assurance inspection requirements of SDI QA/QC.
    - a. Field welds will be subject to inspection.
  - 2. Steel decking will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 053100

**SECTION 054000**

**COLD-FORMED METAL FRAMING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Interior non-load-bearing wall framing.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For the following:
1. Cold-formed steel framing materials.
  2. Interior non-load-bearing wall framing.
  3. Vertical deflection clips.
  4. Single deflection track.
  5. Double deflection track.
  6. Drift clips.
  7. Post-installed anchors.
  8. Power-actuated anchors.
- B. Shop Drawings:
1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
  2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Product certificates.
- C. Product test reports.
- D. Research Reports:
1. For post-installed anchors and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

**1.4 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Qualified according to ASTM E329 for testing indicated.
- B. Product Tests: Mill certificates or data from a qualified independent testing agency.
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. ClarkDietrich.
  2. Nuconsteel, A Nucor Company.

## **2.2 PERFORMANCE REQUIREMENTS**

- A. Cold-Formed Steel Framing Standards: Unless more stringent requirements are indicated, framing shall comply with AISI S100, AISI S200, and the following:

1. Wall Studs: AISI S211.
2. Headers: AISI S212.
3. Lateral Design: AISI S213.

## **2.3 COLD-FORMED STEEL FRAMING MATERIALS**

- A. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, of grade and coating designation as follows:

1. Grade: As required by structural performance..
2. Coating: G90 or equivalent..

- B. Steel Sheet for Vertical Deflection Clips: ASTM A653/A653M, structural steel, zinc coated, of grade and coating as follows:

1. Grade: As required by structural performance..
2. Coating: G60..

## **2.4 EXTERIOR NON-LOAD-BEARING WALL FRAMING**

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 20 gauge 0.0329 inch.
2. Flange Width: 1-5/8 inches.
3. Section Properties: <Insert minimum allowable calculated section modulus, moment of inertia, and allowable moment>.

- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and matching minimum base-metal thickness of steel studs.

- C. Vertical Deflection Clips: Manufacturer's standard bypass clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web.

- D. < Single Deflection Track: Manufacturer's single, deep-leg, U-shaped steel track; unpunched, with unstiffened flanges, of web depth to contain studs while allowing free vertical movement, with flanges designed to support horizontal loads and transfer them to the primary structure.

## **2.5 INTERIOR NON-LOAD-BEARING WALL FRAMING**

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 20 gauge, 0.0329 inch.
2. Flange Width: 1-5/8 inches.

- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and matching minimum base-metal thickness of steel studs.

## **2.6 FRAMING ACCESSORIES**

- A. Fabricate steel-framing accessories from ASTM A1003/A1003M, Structural Grade, Type H, metallic coated steel sheet, of same grade and coating designation used for framing members.

- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated.

## **2.7 ANCHORS, CLIPS, AND FASTENERS**

- A. Steel Shapes and Clips: ASTM A36/A36M, zinc coated by hot-dip process according to ASTM A123/A123M.
- B. Anchor Bolts: ASTM F1554, Grade 36, threaded carbon-steel hex-headed bolts, carbon-steel nuts, and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A153/A153M, Class C.
- C. Post-Installed Anchors: Fastener systems with bolts of same basic metal as fastened metal, if visible, unless otherwise indicated; with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC508 or ICC-ES AC308 as appropriate for the substrate.
  - 1. Uses: Securing cold-formed steel framing to structure.
  - 2. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
- D. Mechanical Fasteners: ASTM C1513, corrosion-resistant-coated, self-drilling, self-tapping, steel drill screws.
  - 1. Head Type: Low-profile head beneath sheathing; manufacturer's standard elsewhere.

## **2.8 MISCELLANEOUS MATERIALS**

- A. Galvanizing Repair Paint: ASTM A780/A780M or SSPC-Paint 20.
- B. Cement Grout: Portland cement, ASTM C150/C150M, Type I; and clean, natural sand, ASTM C404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.
- C. Nonmetallic, Nonshrink Grout: Factory-packaged, nonmetallic, noncorrosive, nonstaining grout, complying with ASTM C1107/C1107M, and with a fluid consistency and 30-minute working time.
- D. Shims: Load-bearing, high-density, multimonomer, nonleaching plastic; or cold-formed steel of same grade and metallic coating as framing members supported by shims.
- E. Sill Sealer Gasket: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.
- B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that required to obtain fire-resistance ratings indicated. Protect remaining fire-resistive materials from damage.
- C. Install sill sealer gasket at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

### **3.2 INSTALLATION, GENERAL**

- A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed steel framing according to AISI S200, AISI S202, and manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

- D. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- E. Install temporary bracing and supports to secure framing and support loads equal to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- F. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.
- G. Install insulation, specified in Section 072100 "Thermal Insulation," in framing-assembly members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- H. Fasten hole-reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

### **3.3 INSTALLATION OF EXTERIOR NON-LOAD-BEARING WALL FRAMING**

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure.
- B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:
  - 1. Stud Spacing: As indicated on Drawings]
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
  - 1. Install single deep-leg deflection tracks and anchor to building structure.
  - 2. Install double deep-leg deflection tracks and anchor outer track to building structure.
  - 3. Connect vertical deflection clips to bypassing studs and anchor to building structure.
  - 4. Connect drift clips to cold-formed steel framing and anchor to building structure.
- E. Install horizontal bridging in wall studs, spaced vertically in rows indicated but not more than 48 inches apart. Fasten at each stud intersection.
  - 1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
  - 2. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
  - 3. Bar Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.
- F. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 18 inches of single deflection track. Install a combination of bridging and stud or stud-track solid blocking of width and thickness matching studs, secured to stud webs or flanges.
  - 1. Install solid blocking centers indicated on Shop Drawings.
- G. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

### **3.4 INSTALLATION OF INTERIOR NON-LOAD-BEARING WALL FRAMING**

- A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure.

- B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:
  - 1. Stud Spacing: As indicated on Drawings.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
  - 1. Install single deep-leg deflection tracks and anchor to building structure.
- E. Install horizontal bridging in wall studs, spaced vertically in rows indicated but not more than 48 inches apart. Fasten at each stud intersection.
  - 1. Channel Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
  - 2. Strap Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
  - 3. Bar Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.
- F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

### **3.5 INSTALLATION TOLERANCES**

- A. Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
  - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

### **3.6 REPAIRS**

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A780/A780M and manufacturer's written instructions.

### **3.7 FIELD QUALITY CONTROL**

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Cold-formed steel framing will be considered defective if it does not pass tests and inspections.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

**END OF SECTION 054000**



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**SECTION 055000  
METAL FABRICATIONS**

**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 the following:
  1. Steel framing and supports for mechanical and electrical equipment.
  2. Loose bearing and leveling plates.
  3. Metal bollards.
  4. Pipe guards.
  5. Loose steel lintels.
  6. Anchor bolts, steel pipe sleeves, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.

1.3 SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details for metal fabrications.
  1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
  2. Provide templates for anchors and bolts specified for installation under other Sections.
- B. Welding certificates.

1.4 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to the following:
  1. AWS D1.1, "Structural Welding Code--Steel."
  2. AWS D1.2, "Structural Welding Code--Aluminum."
  3. AWS D1.3, "Structural Welding Code--Sheet Steel."
  4. AWS D1.6, "Structural Welding Code--Stainless Steel."

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
  1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without

- field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
2. Provide allowance for trimming and fitting at site.

## 1.6 COORDINATION

- A. Coordinate installation of anchorages for metal fabrications. 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.
- B. Coordinate installation of steel weld plates and angles for casting into concrete that are specified in this Section but required for work of another Section. Deliver such items to Project site in time for installation.

## PART 2 - PRODUCTS

### 2.1 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces, unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

### 2.2 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, cold-formed steel tubing.
- C. Steel Pipe: ASTM A 53/A 53M, standard weight (Schedule 40), unless another weight is indicated or required by structural loads.

### 2.3 FASTENERS

- A. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- B. Anchor Bolts: ASTM F 1554, Grade 36.
  1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.
- C. Cast-in-Place Anchors in Concrete: Anchors capable of sustaining, without failure, a load equal to four times the load imposed, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  1. Threaded or wedge type; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, hot-dip galvanized per ASTM A 153/A 153M.

- D. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488, conducted by a qualified independent testing agency.
  - 1. Material for Anchors in Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.
  - 2. Material for Anchors in Exterior Locations: Alloy Group 1 stainless-steel bolts complying with ASTM F 593 and nuts complying with ASTM F 594.

## 2.4 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79.
  - 1. Use primer with a VOC content of 420 g/L (3.5 lb/gal.) or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 2. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint for regalvanizing welds in steel, complying with SSPC-Paint 20.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- F. Concrete Materials and Properties: Comply with requirements in Division 3 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.

## 2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form exposed work true to line and level with accurate angles and surfaces and straight edges.
- D. Weld corners and seams continuously 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.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

## 2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction, unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction retained by framing and supports. Cut, drill, and tap units to receive hardware, hangers, and similar items.
- C. Galvanize miscellaneous framing and supports where indicated.
- D. Prime miscellaneous framing and supports with zinc-rich primer where indicated.

## 2.7 LOOSE STEEL LINTELS

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Weld adjoining members together to form a single unit where indicated.
- B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span but not less than 8 inches, unless otherwise indicated.
- C. Galvanize loose steel lintels located in exterior walls.
- D. Prime loose steel lintels located in exterior walls with zinc-rich primer.

## 2.8 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
- B. Galvanize plates after fabrication.
- C. Prime plates with zinc-rich primer.

## 2.9 STEEL WELD PLATES AND ANGLES

- A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with not less than two integrally welded steel strap anchors for embedding in concrete.

2.10 METAL BOLLARDS

- A. Fabricate metal bollards from Schedule 40 steel pipe.
- B. Fabricate sleeves for bollard anchorage from steel pipe with 1/4-inch- thick steel plate welded to bottom of sleeve. Make sleeves not less than 8 inches deep and 3/4 inch larger than OD of bollard.

**PART 3 - EXECUTION**

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
  - 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.
  - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag bolts, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- B. Anchor supports for operable partitions securely to and rigidly brace from building structure.

- C. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.
  - 1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.
- D. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.
  - 1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

### 3.3 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
  - 1. Use nonshrink grout, either metallic or nonmetallic, in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.
  - 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

### 3.4 INSTALLING METAL BOLLARDS

- A. Anchor bollards in place with concrete footings. Center and align bollards in holes 3 inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.
- B. Fill bollards solidly with concrete, mounding top surface to shed water.

### 3.5 INSTALLING NOSINGS, TREADS, AND THRESHOLDS

- A. Center nosings on tread widths.
- B. For nosings embedded in concrete steps or curbs, align nosings flush with riser faces and level with tread surfaces.
- C. Seal thresholds exposed to exterior with elastomeric sealant complying with Division 7 Section "Joint Sealants" to provide a watertight installation.

### 3.6 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 9 painting Sections.
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055000



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**SECTION 055113**

**METAL PAN STAIRS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Preassembled steel stairs with concrete-filled treads.
  - 2. Steel tube railings and guards attached to metal stairs.
  - 3. Steel tube handrails attached to walls adjacent to metal stairs.
  - 4. Railing gates at the level of exit discharge.

**1.3 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for metal stairs, railings, and guards.
  - 1. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, blocking for attachment of wall-mounted handrails, and items with integral anchors, that are to be embedded in concrete or masonry.
  - 2. Deliver such items to Project site in time for installation.
- C. Coordinate locations of hanger rods and struts with other work so they do not encroach on required stair width and are within fire-resistance-rated stair enclosure.
- D. Schedule installation of railings and guards so wall attachments are made only to completed walls.
  - 1. Do not support railings and guards temporarily by any means that do not satisfy structural performance requirements.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For metal pan stairs and the following:
  - 1. Prefilled metal-pan-stair treads.
  - 2. Shop primer products.
  - 3. Nonslip-aggregate concrete finish.
  - 4. Precast concrete treads.
  - 5. Handrail wall brackets.
  - 6. Grout.
- B. Shop Drawings:
  - 1. Include plans, elevations, sections, details, and attachments to other work.
  - 2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
  - 3. Include plan at each level.
  - 4. Indicate locations of anchors, weld plates, and blocking for attachment of wall-mounted handrails.
  - 5. Indicate profile and dimensions of precast terrazzo treads.

6. Indicate profile and dimensions of epoxy-resin-filled treads.

- C. Samples for Verification: For each type and finish of nosing.
- D. Delegated-Design Submittal: For stairs, railings and guards,, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

### **1.5 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

### **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: Fabricator of products.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials to permit easy access for inspection and identification.
  - 1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
  - 2. Protect steel members and packaged materials from corrosion and deterioration.
  - 3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.
    - a. Repair or replace damaged materials or structures as directed.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. 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 Load: 100 lbf/sq. ft..
  - 2. Concentrated Load: 300 lbf applied on an area of 4 sq. in..
  - 3. Uniform and concentrated loads need not be assumed to act concurrently.
  - 4. Stair Framing: Capable of withstanding stresses resulting from railing and guard loads in addition to loads specified above.
  - 5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch, whichever is less.
- B. Structural Performance of Railings and Guards: Railings and guards, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ft. applied in any direction.
    - b. Concentrated load of 200 lbf applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
  - 2. Infill of Guards:
    - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..

- b. Infill load and other loads need not be assumed to act concurrently.
- 3. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

## 2.2 METALS

- A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- C. Steel Tubing for Railings and Guards: ASTM A500/A500M (cold formed) or ASTM A513/A513M.
  - 1. Provide galvanized finish for exterior installations and where indicated.
- D. Steel Pipe for Railings and Guards: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
  - 1. Provide galvanized finish for exterior installations and where indicated.
- E. Uncoated, Cold-Rolled Steel Sheet: ASTM A1008/A1008M, either commercial steel, Type B, or structural steel, Grade 25, unless another grade is required by design loads; exposed.
- F. Uncoated, Hot-Rolled Steel Sheet: ASTM A1011/A1011M, either commercial steel, Type B, or structural steel, Grade 30, unless another grade is required by design loads.
- G. Galvanized-Steel Sheet: ASTM A653/A653M, G90 coating, either commercial steel, Type B, or structural steel, Grade 33, unless another grade is required by design loads.

## 2.3 FASTENERS

- A. General: Provide [zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5] [Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5] where built into exterior walls.
  - 1. Select fasteners for type, grade, and class required.
- B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated and capable of withstanding design loads.
- C. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
  - 1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for exterior stairs.
- E. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.
  - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.

2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

#### **2.4 MISCELLANEOUS MATERIALS**

- A. Handrail Wall Brackets: [Cast aluminum center of rail 2-1/2 inches from face of wall.
- B. Welding Electrodes: Comply with AWS requirements.
- C. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- D. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
  1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- E. Zinc-Rich Primer: Comply with SSPC-Paint 20, Type II, Level 2, and compatible with topcoat.
- F. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish system indicated.
- G. Galvanizing Repair Paint: High-zinc-dust-content paint complying with ASTM A780/A780M and compatible with paints specified to be used over it.
- H. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.
- I. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for interior or exterior use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.
- J. Prefilled Concrete Treads:
  1. Concrete Materials and Properties: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with minimum 28-day compressive strength of 3000 psi and maximum aggregate size of 1/2 inch unless otherwise indicated.
  2. Nonslip-Aggregate Concrete Finish: Factory-packaged abrasive aggregate made from fused, aluminum-oxide grits or crushed emery; rustproof and nonglazing; unaffected by freezing, moisture, or cleaning materials.
  3. Plain Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, steel, 6 by 6 inches, W1.4 by W1.4, unless otherwise indicated on Drawings.
  4. Reinforcement Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening welded-wire reinforcement in place.
    - a. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete.
- K. For galvanized reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.

#### **2.5 PRECAST CONCRETE TREADS**

- A. Concrete Materials and Properties: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, ready-mixed concrete with a minimum 28-day compressive strength of 5000 psi and a total air content of not less than 4 percent or more than 6 percent.
- B. Reinforcement: Galvanized, welded-wire reinforcement, 2 by 2 inches by 0.062-inch-diameter steel wire; comply with ASTM A1064/A1064M, except for minimum wire size.

## 2.6 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, railings and guards, 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.
  - 2. Use connections that maintain structural value of joined pieces.
- B. Assemble stairs, railings, and guards in shop to greatest extent possible.
  - 1. Disassemble units only as necessary for shipping and handling limitations.
  - 2. Clearly mark units for reassembly and coordinated installation.
- C. Cut, drill, and punch metals cleanly and accurately.
  - 1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
  - 2. Remove sharp or rough areas on exposed surfaces.
- D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Form exposed work with accurate angles and surfaces and straight edges.
- F. 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.
  - 4. Weld exposed corners and seams continuously unless otherwise indicated.
  - 5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #1 - No evidence of welded joint.
- G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
  - 1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
  - 2. Locate joints where least conspicuous.
  - 3. Fabricate joints that will be exposed to weather in a manner to exclude water.
  - 4. Provide weep holes where water may accumulate internally.

## 2.7 FABRICATION OF STEEL-FRAMED STAIRS

- A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Commercial Class, unless more stringent requirements are indicated.
- B. Stair Framing:
  - 1. Fabricate stringers as indicated on Drawings.
    - a. Stringer Size: As indicated on Drawings.
    - b. Provide closures for exposed ends of channel and rectangular tube stringers.
    - c. Finish: Shop primed.
  - 2. Construct platforms of steel channel or rectangular tube headers and miscellaneous framing members as indicated on Drawings.
    - a. Provide closures for exposed ends of channel and rectangular tube framing.

- b. Finish: Shop primed
3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.
4. Where stairs are enclosed by gypsum board assemblies, provide hanger rods or struts to support landings from floor construction above or below.
  - a. Locate hanger rods and struts where they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.
5. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.
- C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch.
  1. Fabricate treads and landing subplatforms of exterior stairs so finished walking surfaces slope to drain.
  2. Steel Sheet: Uncoated, cold rolled steel sheet unless otherwise indicated].
  3. Steel Sheet: Galvanized-steel sheet, where indicated.
  4. Directly weld metal pans to stringers; locate welds on top of subtreads where they will be concealed by concrete fill. Do not weld risers to stringers.
  5. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting, or bolting.
  6. Shape metal pans to include nosing integral with riser.
  7. Attach abrasive nosings to risers.
  8. At Contractor's option, provide stair assemblies with metal pan subtreads filled with reinforced concrete during fabrication.
  9. Provide epoxy-resin-filled treads, reinforced with glass fibers, with non-slip-concrete aggregate finish to tread surface.
  10. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.
    - a. Smooth Soffit Construction: Construct subplatforms with flat metal under surfaces to produce smooth soffits.

## **2.8 FABRICATION OF STAIR RAILINGS AND GUARDS**

- A. Comply with applicable requirements in Section 055213 "Pipe and Tube Railings."
- B. Fabricate railings and guards to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of member, post spacings, wall bracket spacing, and anchorage, but not less than that needed to withstand indicated loads.
  1. Rails and Posts: 1-1/2-inch- diameter top and bottom rails and 1-1/2-inch-round posts.
  2. Picket Infill: 1/2-inch round pickets spaced to prohibit the passage of a 4-inch diameter sphere.
- C. Welded Connections: Fabricate railings and guards with welded connections.
  1. Fabricate connections that are exposed to weather in a manner that excludes water.
    - a. Provide weep holes where water may accumulate internally.
  2. Cope components at connections to provide close fit, or use fittings designed for this purpose.
  3. Weld all around at connections, including at fittings.

4. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  5. Obtain fusion without undercut or overlap.
  6. Remove flux immediately.
  7. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #1 - No evidence of a welded joint [Finish #4 - Good quality, uniform undressed weld with minimal splatter] as shown in NAAMM AMP 521.
- D. Form changes in direction of railings and guards as follows:
1. As detailed.
  2. By bending or by inserting prefabricated elbow fitting].
- E. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- F. Close exposed ends of railing and guard members with prefabricated end fittings.
- G. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.
1. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- H. Connect posts to stair framing by direct welding unless otherwise indicated.
- I. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work.
1. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
  2. For galvanized railings and guards, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.
  3. For nongalvanized railings and guards, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.
  4. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt] and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.
- J. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports.
1. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

## **2.9 FINISHES**

- A. Finish metal stairs after assembly.
- B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
1. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
  2. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- C. Preparation for Shop Priming: Prepare uncoated, ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
- D. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise



indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedments for compliance with requirements.
  - 1. For wall-mounted railings, verify locations of concealed reinforcement within gypsum board and plaster assemblies.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION OF METAL PAN STAIRS**

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.
  - 1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.
  - 1. Grouted Baseplates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates.
    - a. Clean bottom surface of plates.
    - b. Set plates for structural members on wedges, shims, or setting nuts.
    - c. Tighten anchor bolts after supported members have been positioned and plumbed.
    - d. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
    - e. Promptly pack grout solidly between bearing surfaces and plates so no voids remain.
      - 1) Neatly finish exposed surfaces; protect grout and allow to cure.
      - 2) Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- E. Fit exposed connections accurately together to form hairline joints.
  - 1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
  - 2. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
  - 3. Comply with requirements for welding in "Fabrication, General" Article.
- F. Place and finish concrete fill for treads and platforms to comply with Section 033000 "Cast-in-Place Concrete."
  - 1. Install abrasive nosings with anchors fully embedded in concrete.
  - 2. Center nosings on tread width.

- G. Install precast concrete treads with adhesive supplied by manufacturer.
- H. Install precast terrazzo treads according to manufacturer's written instructions.

### **3.3 INSTALLATION OF RAILINGS AND GUARDS**

- A. Adjust railing and guard systems before anchoring to ensure matching alignment at abutting joints with tight, hairline joints.
  - 1. Space posts at spacing indicated or, if not indicated, as required by design loads.
  - 2. Plumb posts in each direction, within a tolerance of 1/16 inch in 3 feet.
  - 3. Align rails and guards so variations from level for horizontal members and variations from parallel with rake of stairs for sloping members do not exceed 1/4 inch in 12 feet.
  - 4. Secure posts, rail ends, and guard ends to building construction as follows:
    - a. Anchor posts to steel by welding or bolting to steel supporting members.
    - b. Anchor handrail and guard ends to concrete and masonry with steel round flanges welded to rail and guard ends and anchored with post-installed anchors and bolts.
- B. Install railing gates level, plumb, and secure for full opening without interference.
  - 1. Attach hardware using tamper-resistant or concealed means.
  - 2. Adjust hardware for smooth operation.
- C. Attach handrails to wall with wall brackets.
  - 1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
  - 2. Secure wall brackets to building construction as follows:
    - a. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
    - b. For hollow masonry anchorage, use toggle bolts.
    - c. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.
    - d. For steel-framed partitions, use hanger or lag bolts set into fire-retardant-treated wood backing between studs. Coordinate with stud installation to locate backing members.
    - e. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.
    - f. For steel-framed partitions, use toggle bolts installed through flanges of steel framing or through concealed steel reinforcements.

### **3.4 REPAIR**

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
  - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- C. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

**END OF SECTION 055113**

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**SECTION 055213**

**PIPE AND TUBE RAILINGS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Steel railings.
- B. Related Requirements:
  - 1. Section 055113 "Metal Pan Stairs" for steel tube railings associated with metal pan stairs.

**1.3 COORDINATION**

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. 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.

**1.4 ACTION SUBMITTALS**

- A. Product Data:
  - 1. Manufacturer's product lines of mechanically connected railings.
  - 2. Fasteners.
  - 3. Post-installed anchors.
  - 4. Handrail brackets.
  - 5. Shop primer.
  - 6. Intermediate coats and topcoats.
  - 7. Bituminous paint.
  - 8. Nonshrink, nonmetallic grout.
  - 9. Anchoring cement.
  - 10. Metal finishes.
  - 11. Paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.

- B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

## 1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces of railings from damage by applying a strippable, temporary protective covering before shipping.

## 1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
- B.
  - 1. Macuch Steel Products, Inc. 1527 Augusta Avenue, Augusta, Georgia 30901, Telephone: (706) 823-2420, Email: [info@macuchsteel.com](mailto:info@macuchsteel.com), Website: [www.macuchsteel.com](http://www.macuchsteel.com).

### 2.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
  - 1. Handrails and Top Rails of Guards:
    - a. Uniform load of 50 lbf/ ft. applied in any direction.
    - b. Concentrated load of 200 lbf applied in any direction.
    - c. Uniform and concentrated loads need not be assumed to act concurrently.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

### 2.3 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
  - 1. Provide type of bracket with predrilled hole for exposed bolt anchorage to wood blocking and that provides 2-1/4-inch clearance minimum from inside face of handrail to finished wall surface.

## 2.4 STEEL RAILINGS

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Tubing: ASTM A500/A500M (cold formed) or ASTM A513/A513M, Type 5.
- C. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
  - 1. Provide galvanized finish for exterior installations and where indicated.
- D. Plates, Shapes, and Bars: ASTM A36/A36M.
- E. Cast Iron Fittings: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

## 2.5 FASTENERS

- A. Fastener Materials:
  - 1. Ungalvanized -Steel Railing Components: Plated steel fasteners complying with ASTM F1941, Class Fe/Zn 5 for zinc coating.
  - 2. Hot-Dip Galvanized Railing Components: Type 304 stainless steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329/F2329M for zinc coating.
  - 3. Finish exposed fasteners to match appearance, including color and texture, of railings.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction and capable of withstanding design loads.
- C. Fasteners for Interconnecting Railing Components:
  - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
  - 2. **Provide** square or hex socket flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193.
  - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.

## 2.6 MISCELLANEOUS MATERIALS

- A. Handrail Brackets: Cast iron , Cast aluminum,] center of handrail 3 inches from wall.
- B. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting", or Section 099123 "Interior Painting."
- C. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
  - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

- D. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- E. Intermediate Coats and Topcoats: Provide products that comply with or Section 099123 "Interior Painting
- F. Bituminous Paint: Cold-applied asphalt emulsion, complying with ASTM D1187/D1187M.
- G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout, complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- H. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
  - 1. Water-Resistant Product: At exterior locations, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

## **2.7 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. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.
  - 1. Clearly mark units for reassembly and coordinated installation.
  - 2. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately.
  - 1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
  - 2. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water.
  - 1. Provide weep holes where water may accumulate.
  - 2. Locate weep holes in inconspicuous locations.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded or nonwelded connections unless otherwise indicated.
- H. 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 Finish #1 welds; ornamental quality with no evidence of a welded joint.
- I. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.
- J. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
1. Fabricate splice joints for field connection, using an epoxy structural adhesive, if this is manufacturer's standard splicing method.
- K. Form changes in direction as follows:
1. As detailed.
  2. By bending or by inserting prefabricated elbow fittings.
- L. 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.
- M. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.
- N. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- O. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.
- P. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work.
1. Fabricate anchorage devices capable of withstanding loads imposed by railings.
  2. Coordinate anchorage devices with supporting structure.
- Q. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.
- R. Toe Boards/Stringer: Where indicated, provide toe boards/stringer at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

## **2.8 STEEL AND IRON FINISHES**

- A. Galvanized Railings:
1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
  2. Comply with ASTM A123/A123M for hot-dip galvanized railings.



3. Comply with ASTM A153/A153M for hot-dip galvanized hardware.
  4. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
  5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner and as follows.
1. Comply with SSPC-SP 16.
- D. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, hot-dip galvanize anchors to be embedded in exterior concrete or masonry.
- E. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below:
1. Railings Indicated To Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3.
- F. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1 for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
1. Shop prime uncoated railings with universal shop primer, red or gray, color to coordinate with Owner selected finish paint unless zinc-rich primer is indicated.
  2. Do not apply primer to galvanized surfaces.
- G. Shop-Painted Finish: Comply with Section 099113 "Exterior Painting."
1. Color: As selected by Architect from manufacturer's full range.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

#### **3.2 INSTALLATION, GENERAL**

- A. Perform cutting, drilling, and fitting required for installing railings.
1. Fit exposed connections together to form tight, hairline joints.
  2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
  3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
  4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
  5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
  6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
  - 1. Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

### **3.3 RAILING CONNECTIONS**

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws, using plastic cement filler colored to match finish of railings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article, whether welding is performed in the shop or in the field.
- C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve, extending 2 inches beyond joint on either side; fasten internal sleeve securely to one side; and locate joint within 6 inches of post.

### **3.4 ANCHORING POSTS**

- A. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Cover anchorage joint with flange of same metal as post, welded to post after placing anchoring material.
- C. Leave anchorage joint exposed with anchoring material flush with adjacent surface.
- D. Anchor posts to metal surfaces with flanges, angle type, or floor type, as required by conditions, connected to posts and to metal supporting members as follows:
  - 1. For steel railings, weld flanges to post and bolt to metal supporting surfaces.

### **3.5 ATTACHING RAILINGS**

- A. Anchor railing ends to concrete and masonry with brackets on underside of rails connected to railing ends and anchored to wall construction with anchors and bolts.
- B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and welded to railing ends or connected to railing ends, using nonwelded connections.
- C. Attach handrails to walls with wall brackets, except where end flanges are used. Provide brackets with 2 ¼ inch minimum clearance from inside face of handrail and finished wall surface.

1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
2. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.

D. Secure wall brackets to building construction as follows:

1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
2. For hollow masonry anchorage, use toggle bolts.
3. For steel-framed partitions, use hanger or lag bolts set into fire-retardant-treated wood backing between studs. Coordinate with stud installation to locate backing members

### **3.6 REPAIR**

A. Touchup Painting:

1. Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
  - a. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 099123 "Interior Painting."

### **3.7 CLEANING**

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780/A780M.

### **3.8 PROTECTION**

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction period, so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

**END OF SECTION 055213**

**SECTION 061000**

**ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Framing with dimension lumber.
  - 2. Rooftop equipment bases and support curbs.
  - 3. Wood blocking and nailers.
- B. Related Requirements:
  - 1. Section 061600 "Sheathing" for sheathing, subflooring, and underlayment.

**1.3 DEFINITIONS**

- A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.
- C. OSB: Oriented strand board.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

**PART 2 - PRODUCTS**

**2.1 WOOD PRODUCTS, GENERAL**

- A. Maximum Moisture Content of Lumber: 19 percent for **2-inch nominal** thickness or less; no limit for more than **2-inch nominal** thickness unless otherwise indicated.

**2.2 WOOD-PRESERVATIVE-TREATED LUMBER**

- A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2[ for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground].
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
  - 2. For exposed items indicated to receive a stained or natural finish, chemical formulations shall not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.

- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Application: Treat items indicated on Drawings, and the following:
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
  - 2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
  - 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
  - 4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
  - 5. Wood floor plates that are installed over concrete slabs-on-grade.

### **2.3 FIRE-RETARDANT-TREATED MATERIALS**

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
  - 1. Treatment shall not promote corrosion of metal fasteners.
  - 2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201 at 92 percent relative humidity. Use where exterior type is not indicated.
  - 3. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D5664 and design value adjustment factors shall be calculated according to ASTM D6841.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- E. Application: Treat items indicated on Drawings, and the following:
  - 1. Framing for raised platforms.
  - 2. Framing for stages.
  - 3. Concealed blocking.
  - 4. Framing for non-load-bearing partitions.
  - 5. Framing for non-load-bearing exterior walls.

### **2.4 DIMENSION LUMBER FRAMING**

- A. Non-Load-Bearing Interior Partitions: Construction or No. 2] grade.
  - 1. Application: All interior partitions

2. Species:
  - a. Southern pine or mixed southern pine; SPIB.
  - b. Spruce-pine-fir; NLGA.
  - c. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

## **2.5 MISCELLANEOUS LUMBER**

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  1. Blocking.
  2. Nailers.
  3. Rooftop equipment bases and support curbs.
- B. Dimension Lumber Items:[Construction or No. 2 grade lumber of the following species:
  1. Mixed southern pine or southern pine; SPIB.
  2. Spruce-pine-fir; NLGA.
  3. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

## **2.6 FASTENERS**

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

## **2.7 METAL FRAMING ANCHORS**

- A. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.
  1. Use for interior locations unless otherwise indicated.
- B. Wall Bracing: T-shaped bracing made for letting into studs in saw kerf, 1-1/8 inches wide by 9/16 inch deep by 0.034 inch thick with hemmed edges.
- C. Wall Bracing: Angle bracing made for letting into studs in saw kerf, 15/16 by 15/16 by 0.040 inch thick with hemmed edges.

## **2.8 MISCELLANEOUS MATERIALS**

- A. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION, GENERAL**

- A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- B. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- C. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
  - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- E. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
  - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
  - 2. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal thickness.
  - 3. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.
  - 4. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet o.c.
- F. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- G. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- H. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code (IBC).
- I. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

### **3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS**

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

### **3.3 INSTALLATION OF WALL AND PARTITION FRAMING**

Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated

A. General: Provide single bottom plate and double top plates using members of 2-inch nominal thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions. Fasten plates to supporting construction unless otherwise indicated

- 1. For interior partitions and walls, provide 2-by-4-inch nominal-size wood studs spaced 16 inches o.c. unless otherwise indicated.

### **3.4 PROTECTION**

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

**END OF SECTION 061000**



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## SECTION 061600

### SHEATHING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Wall sheathing.
  - 2. Roof sheathing.
  - 3. Parapet sheathing.
  - 4. Composite nail base insulated roof sheathing.
- 5. Subflooring.
  
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry for plywood backing panels.
  - 2. Section 061613 "Polyiso Insulation Sheathing" for exterior insulation.
  - 3. Section 072500 "Weather Barriers" for water-resistive barrier applied over wall sheathing.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Indicate type of preservative used and net amount of preservative retained.
  - 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated plywood complies with requirements. Include physical properties of treated materials.
  - 3. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5516.
  - 4. For products receiving waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
  - 5. For air-barrier and water-resistant glass-mat gypsum sheathing, include manufacturer's technical data and tested physical and performance properties of products.
- B. Shop Drawings: For air-barrier and water-resistant glass-mat gypsum sheathing assemblies.
  - 1. Show locations and extent of sheathing, accessories, and assemblies specific to Project conditions.
  - 2. Include details for sheathing joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.

3. Include details of interfaces with other materials that form part of air barrier.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer and testing and inspecting agency.
- B. Product Certificates: From air-barrier and water-resistant glass-mat gypsum sheathing manufacturer, certifying compatibility of sheathing accessory materials with Project materials that connect to or that come in contact with the sheathing.
- C. Product Test Reports: For each air-barrier and water-resistant glass-mat gypsum sheathing assembly, indicating compliance with specified requirements, for tests performed by a qualified testing agency.
- D. Evaluation Reports: For the following, from ICC-ES:
  1. Wood-preservative-treated plywood.
  2. Fire-retardant-treated plywood.
  3. Air-barrier and water-resistant glass-mat gypsum sheathing.
- E. Field quality-control reports.

#### **1.5 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer of air-barrier and water-resistant glass-mat gypsum sheathing.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Fire-Resistance Ratings: As tested according to ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- C. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing Performance: Air-barrier and water-resistant glass-mat gypsum sheathing assembly, and seals with adjacent construction, shall be capable of performing as a continuous 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, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.

#### **2.2 WOOD PANEL PRODUCTS**

- A. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
- B. Factory mark panels to indicate compliance with applicable standard.

### **2.3 PRESERVATIVE-TREATED PLYWOOD**

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2[ for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- C. Application: Treat items indicated on Drawings

### **2.4 FIRE-RETARDANT-TREATED PLYWOOD**

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Fire-Retardant-Treated Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
  - 1. Use treatment that does not promote corrosion of metal fasteners.
  - 2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated plywood by pressure process after being subjected to accelerated weathering according to ASTM D2898. Use for exterior locations and where indicated.
  - 3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D3201/D3201M at 92 percent relative humidity. Use where exterior type is not indicated.
  - 4. Design Value Adjustment Factors: Treated lumber plywood shall be tested according to ASTM D5516 and design value adjustment factors shall be calculated according to ASTM D6305. Span ratings after treatment shall be not less than span ratings specified.
- C. Kiln-dry material after treatment to a maximum moisture content of 15 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- D. Identify fire retardant treated plywood with appropriate classification marking of qualified testing agency.
- E. Application: Treat plywood indicated on Drawings, and the following:
  - 1. Roof and wall sheathing within 48 inches of fire walls.
  - 2. Subflooring and underlayment for raised platforms.
  - 3. Substrate for Wheelchair lift.

## 2.5 WALL SHEATHING

- A. Plywood Sheathing: Either DOC PS 1 or DOC PS 2, Exterior, Structural I sheathing.
  - 1. Span Rating: Not less than 16/0.
  - 2. Nominal Thickness: Not less than 5/8 inch.
- B. Glass-Mat Gypsum Sheathing: ASTM C1177/C1177M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum LLC.
    - b. USG Corporation.
  - 2. Type and Thickness: Type X, 5/8 inch thick.
  - 3. Size: 48 by 96 inches for vertical installation.
- C. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing: ASTM C1177/C1177M, Type X, coated fiberglass mat gypsum sheathing with integral weather-resistant barrier and air barrier complying with ASTM E2178.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum LLC.
    - b. USG Corporation.
  - 2. Thickness: 5/8 inch thick.
  - 3. Size: 48 by 96 inches for vertical installation.
  - 4. Edges: Square.
  - 5. Flashing and Transitions Strips: As acceptable to sheathing manufacturer.
  - 6. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference when tested according to ASTM E2178.
  - 7. Vapor Permeance: Minimum 20 perms when tested according to ASTM E96/E96M, Desiccant Method, Procedure A.
  - 8. Sheathing Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft. when tested according to ASTM E2357.
  - 9. Fire Propagation Characteristics: Complies with NFPA 285 testing as part of an approved assembly.

## 2.6 PARAPET SHEATHING

- A. Glass-Mat Gypsum Sheathing: ASTM C1177/C1177M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum LLC.
    - b. USG Corporation.
  - 2. Type and Thickness: Type X, 5/8 inch thick.
  - 3. Size: 48 by 96 inches for vertical installation.

## 2.7 COMPOSITE NAIL BASE INSULATED ROOF SHEATHING

- A. Oriented-Strand-Board-Surfaced, Polyisocyanurate-Foam Sheathing: ASTM C1289, Type V with DOC PS 2, Exposure 1 oriented strand board on one face.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Atlas Roofing Corporation - MPS.
    - b. Dow Chemical Company (The).
    - c. Johns Manville; a Berkshire Hathaway company.
  - 2. Polyisocyanurate-Foam Thickness: 1-1/2 inches
  - 3. Oriented-Strand-Board Nominal Thickness: 5/8 inch

## 2.8 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. For roof, parapet, and wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
- E. Screws for Fastening Gypsum Sheathing to Cold-Formed Metal Framing: Steel drill screws, in length recommended by sheathing manufacturer for thickness of sheathing to be attached.
  - 1. For steel framing from 0.033 to 0.112 inch thick, use screws that comply with ASTM C954.
- F. Screws for Fastening Composite Nail Base Insulated Roof Sheathing to Metal Roof Deck: Steel drill screws, in type and length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117. Provide washers or plates if recommended by sheathing manufacturer.

## 2.9 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

- A. Sealant for Glass-Mat Gypsum Sheathing: Elastomeric, medium-modulus, neutral-curing silicone joint sealant compatible with joint substrates formed by gypsum sheathing and other materials, recommended by sheathing manufacturer for application indicated and complying with requirements for elastomeric sealants specified in Section 079200 "Joint Sealants."
- B. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 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 and with a history of successful in-service use.
- C. Sheathing Tape for Foam-Plastic Sheathing: Pressure-sensitive plastic tape recommended by sheathing manufacturer for sealing joints and penetrations in sheathing.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION, GENERAL**

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:
1. Table 2304.9.1, "Fastening Schedule," in the ICC's International Building Code.
- D. Coordinate wall, parapet, and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

#### **3.2 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 panels with a 1/4-inch gap where they abut masonry or similar materials that might retain moisture, to prevent wicking.
- B. Horizontal Installation: Install sheathing with V-grooved edge down and tongue edge up. Interlock tongue with groove to bring long edges in contact with edges of adjacent panels without forcing. Abut ends over centers of studs, and stagger end joints of adjacent panels not less than one stud spacing. Attach at perimeter and within field of panel to each stud.
1. Space fasteners approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of panels.
- C. Vertical Installation: Install vertical edges centered over studs. Abut ends and edges with those of adjacent panels. Attach at perimeter and within field of panel to each stud.
1. Space fasteners approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of panels.
- D. Seal sheathing joints according to sheathing manufacturer's written instructions.

1. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing joints and apply and trowel sealant to embed entire face of tape in sealant. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.
- E. Air-Barrier and Water-Resistant Glass-Mat Gypsum Sheathing:
1. Install accessory materials according to sheathing manufacturer's written instructions and details to form a seal with adjacent construction, to seal fasteners, and ensure continuity of air and water barrier.
    - a. Coordinate the installation of sheathing with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
    - b. Install transition strip on roofing membrane or base flashing, so that a minimum of 3 inches of coverage is achieved over each substrate.
  2. Connect and seal sheathing material continuously to air barriers specified under other Sections as well as to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
  3. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
  4. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply preformed silicone extrusion, so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.
    - a. Preformed Silicone Extrusion: Set in full bed of silicone sealant applied to walls, frame, and air-barrier material.
  5. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, doors, and miscellaneous penetrations of sheathing material with foam sealant.
  6. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.
  7. Seal top of through-wall flashings to sheathing with an additional 6-inch-wide, transition strip.
  8. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
  9. Repair punctures, voids, and deficient lapped seams in strips and transition strips extending 6 inches beyond repaired areas in strip direction.

### 3.3 FIELD QUALITY CONTROL

- A. Inspections: Air-barrier and water-resistant glass-mat gypsum sheathing, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
  2. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
  3. Termination mastic has been applied on cut edges.
  4. Strips and transition strips have been firmly adhered to substrate.



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5. Compatible materials have been used.
6. Transitions at changes in direction and structural support at gaps have been provided.
7. Connections between assemblies (sheathing and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
8. All penetrations have been sealed.

**END OF SECTION 061600**

**SECTION 06 16 13**

**POLYISO INSULATION SHEATHING**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Polyisocyanurate Foam-Plastic Board Wall Insulation System:
  - 1. Insulated air and water-resistive barrier system.
    - a. ECOMAXci Wall Solution.
  - a. ECOMAXci FR.
- D. Accessories:
  - 1. Insulation fastener components.
  - 2. Insulation joint and flashing components.
  - 3. Interior insulation attachment and joint closure system.

**1.2 RELATED SECTIONS**

- A. Section 033000 - Cast-in-Place Concrete.
- C. Section 054000 - Cold-Formed Metal Framing.
- D. Section 061000 - Rough Carpentry.
- E. Section 072419 - Water Drainage Exterior Insulation and Finish System (EIFS)
- F. Section 072500 - Weather Barriers.
- G. Section 072726 - Fluid Applied Membrane Air Barriers.
- H. Section 075423 - Thermoplastic Polyolefin (TPO) Roofing.

**1.3 REFERENCES**

- A. American Architectural Manufacturers Association (AAMA):
  - 1. AAMA 714 - Voluntary Specification for Liquid Applied Flashing Used to Create a Water-Resistive Seal around Exterior Wall Openings in Buildings.
  - 2. AAMA 2605 - ANSI/SBCA FS 100-2012 Standard Requirements for Wind Pressure Resistance of Foam Plastic Insulating Sheathing Used in Exterior Wall Covering Assemblies.
- B. Air Barrier Association of America (ABAA).
- C. American National Standards Institute (ANSI):
  - 1. ANSI/SBCA FS 100-2012 - Standard Requirements for Wind Pressure Resistance of Foam Plastic Insulating Sheathing Used in Exterior Wall Covering Assemblies.
- D. ASTM International (ASTM):
  - 1. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
  - 2. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
  - 3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- E. International Code Council (ICC):
  - 1. ICC-ES AC71 - Acceptance Criteria for Foam Plastic Sheathing Panels Used as

Weather-resistive Barriers.

F. National Fire Protection Association (NFPA):

1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.

G. Underwriters Laboratories (UL): USA.

1. UL 723 - Standard for Test for surface Burning Characteristics of Building Materials.
2. UL 790 - Standard Test Methods for Fire Test of Roof Coverings.
3. UL 1256 - Fire Test of Roof Deck Construction.
4. UL 1715 - Fire Test of Interior Finish Material.

#### 1.4 SUBMITTALS

A. Submit under provisions of Section 013300 – Submittal Procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Shop Drawings: Show fabrication and installation layouts of metal wall panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

1. Accessories: Include details of all integral panel components and their interface with adjacent materials.
2. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

D. Verification Samples: For each finish product specified, two samples, minimum size 4 by 6 inches.

E. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum ten years experience.

F. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.

H. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, foundation/structural system/substrate conditions, and insulation manufacturer's installation instructions.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

A. Store and handle products per manufacturer's instructions until ready for installation.

#### 1.6 SEQUENCING

A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction

progress.

- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

## 1.7 PROJECT 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 recommended limits.

## 1.8 WARRANTY

- A. Insulation Warranty: At project closeout, provide to Owner an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Rmax - A Business Unit of the Sika Corporation, which is located at: 13524 Welch Rd.; Dallas, TX 75244-5227; Toll Free Tel: 800-527-0890; Fax: 972-387-4673; Email:[request info \(rmax@rmax.com\)](mailto:request info (rmax@rmax.com)); Web:<https://www.rmax.com>
  - 1. Manufacturing plant locations in Dallas, TX, Greer, SC, and Fernley, NV, to serve multiple regions.
- B. Requests for substitutions will be considered in accordance with provisions of Section 016000 - Product Requirements.

### 2.2 POLYISOCYANURATE FOAM-PLASTIC BOARD - INSULATED AIR AND WATER-RESISTIVE BARRIER SYSTEM

- A. Insulated Air and Water-Resistive Barrier System: Complete single-source continuous insulation system including tapes and flashings. providing air and water-resistive barrier. Tested in accordance with ASTM E2357 and ICC-ES AC71 Acceptance Criteria for Foam Plastic Sheathing Panels Used As Water-Resistive Barriers and listed as an Air Barrier Association of America (ABAA) Evaluated Boardstock Air Barrier Assembly. The system incorporates polyisocyanurate foam insulation board, joint tapes, flashing tapes, liquid sealant, and flashing materials, by one manufacturer. Acceptable for inclusion in exterior wall assemblies when tested in accordance with NFPA 285 with or without exterior gypsum sheathing.
- B. Basis of Design: ECOMAXci Wall Solution System from Rmax.
  - 1. System substitutions not be permitted, except when the system substitution includes all components and materials, that have been tested by the manufacturer as a total system. Submission of documentation substantiating testing and compliance shall be required.
  - 2. Exterior Usage in NFPA 285 Wall Assemblies:
    - a. System and all components to be installed within the system shall be acceptable for inclusion in NFPA 285 exterior wall assemblies, including those that do not include exterior gypsum sheathing.
- C. System Insulation Board Component: ECOMAXci FR Air Barrier from Rmax.
  - 1. Aluminum-Faced, Polyisocyanurate-Foam Insulating Sheathing: ASTM C1289, Type I, Class 1 or Class 2, rigid, cellular, polyisocyanurate thermal insulation, bonded to glass fiber reinforced aluminum facers on both sides. Heavy embossed 12 mil facer with aluminum reflective surface on exposed side.

2. Flame Spread Index and Smoke Contribution per ASTM E84:
    - a. Flame: 25 or less.
    - b. Smoke: 450 or less.
  3. Water Vapor Permeability per ASTM E96 desiccant method: 0.03 perm or less.
  4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.
  5. Compressive Strength per ASTM D1621: 25 psi (172 kPa).
  6. R-Value per ASTM C518: R-6.5 minimum at thickness of 1 inch and R-13.1 minimum at thickness of 2 inches (51 mm).
  7. Required Insulation Thickness and R-value: As indicated on the Drawings.
- D. System Fastening Components:
1. General - Fasteners for Fastening Polyisocyanurate Wall Insulation to Wood Framing Components and Light Gauge Metal Wall Framing:
    - a. Steel drill screws, in type and length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117. Fasteners in contact with fire-retardant-treated wood shall be of suitable material or provided with coating suitable for such use.
    - b. Provide washers or plates if recommended by sheathing or insulation manufacturer. Washers shall be compatible with screw fasteners.
  2. Fasteners for Fastening Polyisocyanurate Wall Insulation to metal stud framed wall surfaces:
    - a. Self-drilling ceramic coated screw.
      - 1) Product: Rodenhouse Grip-Deck screws.
  3. Fasteners for Fastening Polyisocyanurate Wall Insulation to Concrete or Masonry Wall Surfaces:
    - a. One-piece plastic washer and stem, installed in pre-drilled hole in concrete or masonry.
      - 1) Product: Rodenhouse Plasti-Grip PMF Plastic Masonry Fastener.
  4. Washers: Self-sealing for use with Self-drilling screws:
    - a. Self-sealing 2 inches diameter polymer washer, UV stabilized, tested, and approved to provide air and water-resistant seal, in combination with compatible self-drilling screw.
      - 1) Product: Rodenhouse Thermal-Grip ci prong washer.
  5. Washers: Self-sealing for use with barrel style brick ties:
    - a. Self-sealing 2 inches diameter UV stabilized polymer washer tested and approved to provide air and water-resistant seal, barrel-style brick ties.
      - 1) Product: Rodenhouse Thermal-Grip brick tie washer.
  6. Washers: Perforated washers for use with self-drilling screws:
    - a. Perforated face washers 1.75 inch diameter polymer washer, with additives for extended UV exposure for use in combination with compatible self-drilling screw.
      - 1) Product: Rodenhouse Plasti-Grip ci prong washer.
  7. Washers: Perforated Hurricane/High-Wind washers for use with self-drilling screws:
    - a. Perforated face washers 3.0 inch diameter polymer washer, with additives for extended UV exposure for use in combination with compatible self-drilling screw.
      - 1) Product: Rodenhouse Grip-Lok hurricane washer.
- E. System Joint Sealants, Joint Tapes, and Flashing Materials:
1. General - Joint Treatment and Flashing Components:

- a. Material Standards:
    - 1) AAMA 711: For self-adhered flashing and joint materials.
    - 2) AAMA 714: For liquid applied flashing and joint materials.
  - b. Components for use at static joints, joining adjacent aluminum-faced insulation panels include liquid flashing, adhered joint tape, and adhered flashing and transition tape.
  - c. Components for use at static joints, joining aluminum-faced insulation and adjacent elements, including window and wall openings and items penetrating the insulation include: liquid flashing and adhered flashing and transition tape.
  - d. Components for use at dynamic joints at aluminum-faced insulation of up to 3/4 inch in width, shall be restricted to the use of flashing and transition tape, or materials and devices specifically designed to allow for dynamic movement.
  - e. Components for use at dynamic joints at aluminum-faced insulation over 3/4 inch) in width, shall be restricted to the use of materials and devices specifically designed for such joint widths.
2. Liquid Flashing for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation:
- a. Product: Rmax R-SEAL 2000 LF sealant or comparable product.
    - 1) One-component flexible flashing and water barrier sealant.
    - 2) ASTM C920, Type S, Grade NS, Class 12.5, use NT, G, A, O, M.
    - 3) Application Temperature Range: 40 to 104 degrees F (4 to 40 degrees C).
    - 4) Service Range: -40 to 170 degrees F (-40 to 77 degrees C).
    - 5) Curing Rate:
      - a) Skin Formation Time: 60 to 90 minutes.
      - b) Cure Depth: 0.16 inch in 24 hours.
  3. Joint Sealant Tape for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation:
    - a. Product: Rmax R-SEAL 3000 tape or comparable product.
      - 1) Dead soft aluminum foil coated with acrylic pressure-sensitive adhesive.
      - 2) Width: 4 inches.
      - 3) Width: 5 inches for use where coverage is necessary.
      - 4) Width: 5 inches for systems involving High-Velocity Hurricane Zones.
  4. Flashing and Transition Tape for Joints Subject to Movement and Openings at Foil Faced Polyisocyanurate Insulation, and transition to other building materials.
    - a. Product: Rmax R-SEAL 6000 tape or comparable product.
      - 1) Polyethylene membrane with butyl rubber adhesive.
      - 2) Width 9 and 12 inches.

### 2.3 ALUMINUM-FACED AND COATED GLASS MAT FACED INSULATION

- A. Aluminum-Faced, Polyisocyanurate-Foam Interior Exposed Insulation and Insulating Sheathing: ASTM C1289, Type I, Class 1 or Class 2, rigid, cellular, polyisocyanurate thermal insulation, bonded to glass fiber reinforced aluminum facers on both sides. Heavy embossed 12 mil facer with aluminum reflective surface on exposed side.
  1. Basis of Design: ECOMAXci FR from Rmax.
  2. Flame Spread Index and Smoke Contribution per ASTM E84:
    - a. Flame: 25 or less.
    - b. Smoke: 450 or less.
  3. Water Vapor Permeability per ASTM E96 desiccant method: 0.03 perm or less.
  4. Air Permeability per ASTM E2178: 0.004 cfm per sq ft (1.2192 L per min per sq m) or less.
  5. Compressive Strength per ASTM D1621:

- a. 20 psi (138 kPa).
  - b. 25 psi (172 kPa).
6. R-Value per ASTM C518: R-6.0 minimum at thickness of 1 inch and R-13.1 minimum at thickness of 2 inches.
  7. Required Insulation Thickness and R-value: As indicated on the Drawings.
  8. Insulation shall be suitable as continuous exterior wall insulation.
  9. Insulation shall be determined to be suitable for exposed interior use. Testing to be conducted in accordance with UL 1715 or NFPA 286, as addressed in IBC Section 2603.9 Special Approval; relative to the following:
    - a. Without need for an ignition barrier on walls and ceilings.
    - b. Without need for an ignition barrier on walls or ceilings within the same building space, conforming to the following:
      - 1) On walls only for insulation thickness of 4.5 inches maximum.
      - 2) On ceilings only for insulation thickness of 12 inches.
  10. Exterior Usage in NFPA 285 Wall Assemblies:
    - a. Acceptable for inclusion in NFPA 285 exterior wall assemblies, including those that do not include exterior gypsum sheathing.

## 2.5 ACCESSORIES

- A. Insulation Fastener Components:
  1. General - Fasteners for Fastening Polyisocyanurate Wall Insulation to Wood Framing Components, Light Gauge Metal Wall Framing Components and Wood and Metal Roof Decks:
    - a. Steel drill screws, in type and length recommended by sheathing manufacturer for thickness of sheathing to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B117. Fasteners in contact with fire-retardant-treated wood shall be of suitable material or provided with coating suitable for such use.
    - b. Provide washers or plates if recommended by sheathing or insulation manufacturer. Washers shall be compatible with screw fasteners.
  2. Fasteners for Fastening Polyisocyanurate Wall Insulation to metal stud framed wall surfaces:
    - a. Self-drilling ceramic coated screw.
      - 1) Product: Rodenhouse Grip-Deck screws or comparable products.
  3. Nailboard Fasteners: Engineered for attaching nail base wall and roof panels to wood and metal framing and structural decks.
    - a. Large-diameter, low profile pancake head, case hardened and tempered carbon steel, epoxy e-coat to comply with governing standards for use with treated wood including fire-retardant-treated wood.
      - 1) Product: TurFast; Nailboard Fasteners or comparable product.
    - b. Thread Style and Point:
      - 1) SIPTP: Thread-point for wood and timber applications.
      - 2) SIPLD: Light-duty. Drill point for light gauge metal framing, corrugated steel deck, and wood applications.
      - 2) SIPHD: Heavy-duty. Drill point for thick steel member applications.
  4. Fasteners for Fastening Polyisocyanurate Wall Insulation to Concrete or Masonry Wall Surfaces:
    - a. One-piece plastic washer and stem, installed in pre-drilled hole in concrete or masonry.
      - 1) Product: Rodenhouse Plasti-Grip PMF Plastic Masonry Fastener or

- comparable product.
5. Washers: Self-sealing for use with Self-drilling screws:
    - a. Self-sealing 2 inches diameter polymer washer, UV stabilized, tested, and approved to provide air and water-resistant seal, in combination with compatible self-drilling screw.
      - 1) Product: Rodenhouse Thermal-Grip ci prong washer or comparable product.
  6. Washers: Self-sealing for use with barrel style brick ties:
    - a. Self-sealing 2 inches diameter UV stabilized polymer washer tested and approved to provide air and water-resistant seal, barrel-style brick ties.
      - 1) Product: Rodenhouse Thermal-Grip brick tie washer or comparable product.
  7. Washers: Perforated washers for use with self-drilling screws:
    - a. Perforated face washers 1.75 inch diameter polymer washer, with additives for extended UV exposure for use in combination with compatible self-drilling screw.
      - 1) Product: Rodenhouse Plasti-Grip ci prong washer or comparable product.
  8. Washers: Perforated Hurricane/High-Wind washers for use with self-drilling screws:
    - a. Perforated face washers 3.0 inch diameter polymer washer, with additives for extended UV exposure for use in combination with compatible self-drilling ceramic coated screw.
      - 1) Product: Rodenhouse Grip-Lok hurricane washer or comparable product.
- B. Insulation Joint and Flashing Components:
1. General - Joint Treatment and Flashing Components:
    - a. Material Standards:
      - 1) AAMA 711: For self-adhered flashing and joint materials.
      - 2) AAMA 714: For liquid applied flashing and joint materials.
    - b. Components for use at static joints, joining adjacent aluminum-faced insulation panels include liquid flashing, adhered joint tape, and adhered flashing and transition tape.
    - c. Components for use at static joints, joining aluminum-faced insulation and adjacent elements, including window and wall openings and items penetrating the insulation include: liquid flashing and adhered flashing and transition tape.
    - d. Components for use at dynamic joints at aluminum-faced insulation of up to 3/4 inch in width, shall be restricted to the use of flashing and transition tape, or materials and devices specifically designed to allow for dynamic movement.
    - e. Components for use at dynamic joints over 3/4 inch in width, shall be restricted to the use of materials and devices specifically designed for such joint widths.
  2. Liquid Flashing for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation:
    - a. Product: Rmax R-SEAL 2000 LF sealant or comparable product.
      - 1) One-component flexible flashing and water barrier sealant.
      - 2) ASTM C920, Type S, Grade NS, Class 12.5, use NT, G, A, O, M.
      - 3) Application Temperature Range: 40 to 104 degrees F (4 to 40 degrees C).
      - 4) Service Range: -40 to 170 degrees F (-40 to 77 degrees C).
      - 5) Curing Rate:
        - a) Skin Formation Time: 60 to 90 minutes.



- b) Cure Depth: 0.16 inch in 24 hours.
- 3. Joint Sealant Tape for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation:
  - a. Product: Rmax R-SEAL 3000 tape or comparable product.
    - 1) Dead soft aluminum foil coated with acrylic pressure-sensitive adhesive.
    - 2) Width: 4 inches.
    - 3) Width: 5 inches for use where coverage is necessary.
    - 4) Width: 5 inches for systems involving High-Velocity Hurricane Zones.
- 4. Joint Sealant Tape for Stationary Joint Treatment of White Finished Foil Faced Polyisocyanurate Insulation:
  - a. Product: Rmax R-SEAL 3000W tape, or comparable product.
    - 1) Dead soft white aluminum foil coated with acrylic pressure-sensitive adhesive.
    - 3) Width 3 inches.
- 5. Flashing and Transition Tape for Joints Subject to Movement and Openings at Foil Faced Polyisocyanurate Insulation, and transition to other building materials.
  - a. Product: Rmax R-SEAL 6000 tape or comparable product.
    - 1) Polyethylene membrane with butyl rubber adhesive.
    - 2) Width 9 and 12 inches.
- 6. Joint Sealant Tape for Stationary Joint Treatment of Foil Faced Polyisocyanurate Insulation, in Residential and Light Commercial Construction:
  - a. Product: Rmax R-SEAL Construction Tape or comparable product.
    - 1) White translucent OOP Film with acrylic pressure-sensitive adhesive.
    - 2) Width 3 inches.
- C. Interior Insulation Attachment and Joint Closure System:
  - 1. At Interior Installation of Foil Faced Polyisocyanurate Insulation over interior wall surfaces of buildings, provide in conformance with the following:
    - a. Components to be PVC extrusions, white in color, with flexible edge seal, and perforated fastening leg. Flame Spread Index of 0 and Smoke-Developed Index of 190, per UL 723.
  - 2. Two-Component System for Interior Installation of Foil Faced Polyisocyanurate Insulation; provide in conformance with the following:
    - a. Two-component system, consisting of male component for attachment to wall or framing surface, and T-shaped female component, to be installed over face of insulation panels; allowing for removal and replacement of insulation panels if necessary.
    - b. Product: Victory Bear; Flex-Tite Clip System or comparable product.
  - 3. One Component System for Interior Installation of Foil Faced Polyisocyanurate Insulation; provide in conformance with the following:
    - a. One component system, of size appropriate to the insulation thickness, with flanges for attachment to wall or framing surface; allowing for insulation panels to be installed progressively.
    - c. Product: Victory Bear; Quick Clip System or comparable product.
  - 4. Perimeter Trim Component for Interior Installation of Foil Faced Polyisocyanurate Insulation; provide in conformance with the following:
    - a. J-Channel of size appropriate to the insulation thickness to be installed; intended to secure and conceal exposed edges of insulation panels.

- b. Product: Victory Bear; Flex-Tite J-Channel or comparable product.

### **PART 3 EXECUTION**

#### **3.1 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.

#### **3.2 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.

#### **3.3 INSTALLATION, GENERAL**

- A. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.

#### **3.4 PROTECTION**

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

**END OF SECTION 061613**

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**SECTION 062023**

**INTERIOR FINISH CARPENTRY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Interior trim, including non-fire-rated interior door frames.
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view.
  - 2. Section 099123 "Interior Painting" for priming and backpriming of interior finish carpentry.

**1.3 DEFINITIONS**

- A. MDF: Medium-density fiberboard.
- B. MDO: Plywood with a medium-density overlay on the face.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation.
  - 1. Protect materials from weather by covering with waterproof sheeting, securely anchored.
  - 2. Provide for air circulation around stacks and under coverings.
- B. Deliver interior finish carpentry materials only when environmental conditions comply with requirements specified for installation areas. If interior finish carpentry materials must be stored in other than installation areas, store only where environmental conditions comply with requirements specified for installation areas.

**1.5 FIELD CONDITIONS**

- A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet-work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
  - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

**PART 2 - PRODUCTS**

**2.1 MATERIALS, GENERAL**

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with applicable rules of any rules-writing agency certified by the American Lumber Standard Committee's (ALSC) Board of Review. Grade lumber by an agency certified by the ALSC's Board of Review to inspect and grade lumber under the rules indicated.

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1. Factory mark each piece of lumber with grade stamp of grading agency.
- B. Softwood Plywood: DOC PS 1.
- C. Hardboard: ANSI A135.4.
- D. MDF: ANSI A208.2, Grade 130.
- E. Melamine-Faced Particleboard: Particleboard complying with ANSI A208.1, Grade M-2, finished on both faces with thermally fused, melamine-impregnated decorative paper and complying with NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.
  1. Color: White.

## **2.2 MISCELLANEOUS MATERIALS**

- A. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Clean substrates of projections and substances detrimental to application.

### **3.3 INSTALLATION, GENERAL**

- A. Do not use materials that are unsound; warped; improperly treated or finished; inadequately seasoned; too small to fabricate with proper jointing arrangements; or with defective surfaces, sizes, or patterns.
- B. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials.
  1. Use concealed shims where necessary for alignment.
  2. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
  3. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
  4. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining interior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
  5. Coordinate interior finish carpentry with materials and systems in or adjacent to it.

### **3.4 INSTALLATION OF STANDING AND RUNNING TRIM**

- A. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available.
  1. Do not use pieces less than 24 inches long, except where necessary.
  2. Stagger joints in adjacent and related standing and running trim.
  3. Miter at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint.
  4. Use scarf joints for end-to-end joints.
  5. Plane backs of casings to provide uniform thickness across joints where necessary for alignment.

6. Match color and grain pattern of trim for transparent finish (stain or clear finish) across joints.
7. Install trim after gypsum-board joint finishing operations are completed.
8. Install without splitting; drill pilot holes before fastening where necessary to prevent splitting.
9. Fasten to prevent movement or warping.
10. Countersink fastener heads on exposed carpentry work and fill holes.

**3.5 ADJUSTING**

- A. Replace interior finish carpentry that is damaged or does not comply with requirements.
  1. Interior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.
- B. Adjust joinery for uniform appearance.

**3.6 CLEANING**

- A. Clean interior finish carpentry on exposed and semiexposed surfaces.
- B. Restore damaged or soiled areas and touch up factory-applied finishes if any.

**3.7 PROTECTION**

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
  1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

**END OF SECTION 062023**

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**SECTION 064023**

**INTERIOR ARCHITECTURAL WOODWORK**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

A. Section Includes:

1. Interior standing and running trim.
2. Interior frames and jambs.
3. Wood furring, blocking, shims, and hanging strips for installing interior architectural woodwork items that are not concealed within other construction.
4. Shop priming of interior architectural woodwork.
5. Shop finishing of interior architectural woodwork.

B. Related Requirements:

1. Section 061000 "Rough Carpentry for wood furring, blocking, shims, and hanging strips required for installing interior architectural woodwork that are concealed within other construction before interior architectural woodwork installation.
2. Section 062023 "Interior Finish Carpentry" for interior carpentry exposed to view that is not specified in this Section.

**1.3 COORDINATION**

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

**1.4 ACTION SUBMITTALS**

A. Shop Drawings:

1. Include the following:
  - a. Dimensioned plans, elevations, and sections.
  - b. Attachment details.
2. Show large-scale details.
3. Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.

B. Samples for Initial Selection: For each type of shop-applied exposed finish.

1. Size:
  - a. Lumber Products: Not less than 5 inches wide by 12 inches long], for each species and cut, finished on one side and one edge.

C. Samples for Verification: For the following:



1. Lumber for Transparent Finish: Not less than 5 inches wide by 12 inches long for each species and cut, finished on one side and one edge.

#### **1.5 INFORMATIONAL SUBMITTALS**

A. Qualification Data: For architectural woodwork manufacturer.

B. Product Certificates: For the following:

1. Composite wood and agrifiber products.
2. Adhesives.

#### **1.6 QUALITY ASSURANCE**

A. Manufacturer's Qualifications: 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.

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

A. Comply with the Architectural Woodwork Standards, Section 2.

B. Do not deliver interior architectural woodwork until painting and similar finish operations that might damage woodwork have been completed in installation areas.

C. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

#### **1.8 FIELD CONDITIONS**

A. Environmental Limitations: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

B. Field Measurements: Where interior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.

C. Established Dimensions: Where interior architectural woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

#### **1.9 COORDINATION**

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

## **PART 2 - PRODUCTS**

### **2.1 ARCHITECTURAL WOODWORK, GENERAL**

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

### **2.2 INTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH**

- A. Architectural Woodwork Standards Grade: Premium

- B. Hardwood Lumber:

1. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in same area of building unless otherwise indicated.
2. Wood Moisture Content: 5 to 10 percent.
3. Provide split species on trim that faces areas with different wood species, matching each face of woodwork to species and cut of finish wood surfaces in areas finished.
4. For trim items other than base wider than available lumber, use veneered construction. Do not glue for width.
  - a. For veneered base, use hardwood lumber core, glued for width.
5. For base wider than available lumber, glue for width. Do not use veneered construction.
6. For rails thicker than available lumber, use veneered construction. Do not glue for thickness.

- C. Softwood Lumber:

1. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in same area of building unless otherwise indicated.
2. Wood Moisture Content: 5 to 10 percent.
3. For trim items other than base wider than available lumber, use veneered construction. Do not glue for width.
4. For rails thicker than available lumber, use veneered construction. Do not glue for thickness.
5. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.

### **2.3 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH**

- A. Architectural Woodwork Standards Grade: Custom.

1. Wood Species: Any closed-grain hardwood.
2. Wood Moisture Content: 5 to 10 percent.

### **2.4 INTERIOR FRAMES AND JAMBS FOR TRANSPARENT FINISH**

- A. Architectural Woodwork Standards Grade: Premium.

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1. Wood Species and Cut: Match species and cut indicated for other types of transparent-finished architectural woodwork located in same area of building unless otherwise indicated.
2. Wood Moisture Content: 5 to 10 percent.
3. For frames or jambs wider than available lumber, use veneered construction. Do not glue for width.

**2.5 INTERIOR FRAMES AND JAMBS FOR OPAQUE FINISH**

A. Architectural Woodwork Standards Grade: Custom.

B. Wood Species: Any closed-grain hardwood

1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.
2. Wood Moisture Content: 5 to 10 percent.

**2.6 MISCELLANEOUS MATERIALS**

A. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

**2.7 FABRICATION**

A. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated.

1. Ease edges to radius indicated for the following:
  - a. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.

B. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.

1. Disassemble components only as necessary for shipment and installation.
2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

**2.8 SHOP PRIMING**

A. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.

B. Interior Architectural Woodwork for Opaque Finish: Shop prime with one coat of wood primer as specified in Section 099123 "Interior Painting."

1. Back priming: Apply one coat of primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.

C. Interior Architectural Woodwork for Transparent Finish: Shop-seal concealed surfaces with required pretreatments and first coat of finish as specified in Section 099300 "Staining and Transparent Finishing."

1. Back priming: Apply one coat of sealer, compatible with finish coats, to concealed surfaces of woodwork

## **2.9 SHOP FINISHING**

A. Finish interior architectural woodwork with transparent finish at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with Architectural Woodwork Standards, Section 5 for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing interior architectural woodwork, as applicable to each unit of work.

1. Back priming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of interior architectural woodwork. Apply two coats to end-grain surfaces.

C. Transparent Finish:

1. Architectural Woodwork Standards Grade: Premium.
2. Finish: System - 3, Lacquer, Post Catalyzed.
3. Finish: System - 4, Latex Acrylic, Water Based.
4. Finish: System - 6, Oil, Synthetic Penetrating.
5. Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to woodwork made from closed-grain wood before staining and finishing.
6. Staining: Match approved sample for color.
7. Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
8. Filled Finish for Open-Grain Woods: After staining, apply wash-coat sealer and allow to dry. Apply paste wood filler and wipe off excess. Tint filler to match stained wood.
9. Sheen: Oil Finish - Flat, 15-30, Satin, 31-45 gloss units measured on 60-degree gloss meter according to ASTM D523.

D. Opaque Finish:

1. Architectural Woodworking Standards Grade: Custom
2. Finish: System - 4, Latex Acrylic, Water Based.
3. Color: As selected by Architect from manufacturer's full range
4. Sheen: Semigloss, 46-60 gloss units measured on 60-degree gloss meter according to ASTM D523.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

A. Before installation, condition interior architectural woodwork to humidity conditions in installation areas for not less than 72 hours prior to beginning of installation.

B. Before installing interior architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and back priming of concealed surfaces.

### **3.2 INSTALLATION**

A. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.

B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed during shop fabrication.

C. Install interior architectural woodwork level, plumb, true in line, and without distortion.

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1. Shim as required with concealed shims.
  2. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates.
1. Secure with countersunk, concealed fasteners and blind nailing.
  2. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with interior architectural woodwork.
  3. For shop-finished items, use filler matching finish of items being installed.
- F. Standing and Running Trim:
1. Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.
  2. Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary.
  3. Scarf running joints and stagger in adjacent and related members.
  4. Fill gaps, if any, between top of base and wall with latex sealant, painted to match wall.
  5. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.

### **3.3 REPAIR**

- A. Repair damaged and defective interior architectural woodwork, where possible, to eliminate functional and visual defects..
- B. Where not possible to repair, replace defective woodwork.
- C. Shop Finish: Touch up finishing work specified in this Section after installation of interior architectural woodwork.
1. Fill nail holes with matching filler where exposed.
  2. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.
- D. Field Finish: See Section 099123 "Interior Painting" and Section 099300 "Staining and Transparent Finishing" for final finishing of installed interior architectural woodwork not indicated to be shop finished.

### **3.4 CLEANING**

- A. Clean interior architectural woodwork on exposed and semiexposed surfaces.

**END OF SECTION 064023**

**SECTION 064113**

**WOOD-VENEER-FACED ARCHITECTURAL CABINETS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Wood cabinets for opaque finish.
  - 2. Cabinet hardware and accessories.
  - 3. Wood furring, blocking, shims, and hanging strips for installing architectural cabinets that are not concealed within other construction.
  - 4. Shop finishing.
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.

**1.2 COORDINATION**

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.
- B. Hardware Coordination: Distribute copies of approved hardware schedule specified in Section 087100 "Door Hardware" to manufacturer of architectural cabinets; coordinate Shop Drawings and fabrication with hardware requirements.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- B. Sustainable Design Submittals:
- C. Shop Drawings: For architectural cabinets.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Show large-scale details.
  - 3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
  - 4. Show locations and sizes of cutouts and holes for items installed in architectural cabinets.
  - 5. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
- D. Samples: For each exposed product and for each color and finish specified, in manufacturer's standard size.
- E. Samples for Initial Selection: For each type of exposed finish.
- F. Samples for Verification: For the following:

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1. Lumber and Panel Products with Shop-Applied Opaque Finish: 5 inches wide by 12 inches long for lumber and 12 by 12 inches for panels, for each finish system and color.
  - a. Finish entire exposed surface.
2. Thermally Fused Laminate (TFL) Panels (Thermofoil): 12 by 12 inches, for each color, pattern, and surface finish.
  - a. Provide edge banding on one edge.
3. Corner Pieces:
  - a. Cabinet-front frame joints between stiles and rails and at exposed end pieces, 18 inches high by 18 inches wide by 6 inches deep.
  - b. Miter joints for standing trim.
4. Exposed Cabinet Hardware and Accessories: One full-size unit for each type and finish.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: For [the following:
  1. Composite wood products.
  2. Thermally fused laminate panels.
  3. Adhesives.

**1.5 CLOSEOUT SUBMITTALS**

**1.6 QUALITY ASSURANCE**

- A. Manufacturer's Qualifications: 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.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

**1.8 FIELD CONDITIONS**

- A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. Environmental Limitations with Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between 20 and 50 percent during the remainder of the construction period.
- C. 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/concealed by construction, and indicate measurements on Shop Drawings.
- D. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

## **PART 2 - PRODUCTS**

### **2.1 ARCHITECTURAL CABINET MANUFACTURERS**

- A. Source Limitations: Engage a qualified woodworking firm to assume responsibility for production of architectural cabinets with sequence-matched wood veneers, wood paneling, wood doors with face veneers that are sequence matched with architectural cabinets and transparent-finished wood doors that are required to be of same species as architectural cabinets.

### **2.2 WOOD CABINETS FOR OPAQUE FINISH**

- A. Architectural Woodwork Standards Grade Custom
- B. Type of Construction: Face frame.
- C. Door and Drawer-Front Style: Flush overlay
- D. Species for Exposed Lumber Surfaces: Any closed-grain hardwood.
- E. Semiexposed Surfaces:
1. Surfaces Other Than Drawer Bodies: Match materials indicated for exposed surfaces
- F. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners **or** glued dovetail joints.

### **2.3 WOOD MATERIALS**

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.
  2. Wood Moisture Content: 5 to 10 percent.
- B. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130
  2. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.
  3. Thermally Fused Laminate (TFL) Panels: Particleboard or MDF 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. Fire Retardant Fiberboard: MDF panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel



manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E84.

## 2.4 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 087100 "Door Hardware."
- B. Butt Hinges: 2-3/4-inch, five-knuckle steel hinges made from 0.095-inch-thick metal, and as follows:
- C. Semiconcealed Hinges for Flush Doors: ANSI/BHMA A156.9, B01361.
- D. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 100] degrees of opening To be installed when cabinets are located in public or profile areas as per Drawings.
- E. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.
- F. Wire Pulls: Back mounted, solid metal 5 inches long, 2-1/2 inches deep, and 5/16 inch in diameter.
- G. Catches: Magnetic catches, ANSI/BHMA A156.9, B03141.
- H. Adjustable Shelf Standards and Supports: ANSI/BHMA A156.9, B04071; with shelf rests, B04081.
- I. Shelf Rests: ANSI/BHMA A156.9, B04013; metal.
- J. Drawer Slides: ANSI/BHMA A156.9.
  - 1. Standard Duty (Grade 1 and Grade 2): Side mount and extending under bottom edge of drawer.
  - 2. Heavy-Duty (Grade 1HD-100 and Grade 1HD-200): Side mount
    - a. Type: Full extension.
    - b. Material Zinc-plated ball bearing slides.
    - c. Motion Feature: Soft close dampener.
  - 3. Pencil drawers not more than 3 inches high and not more than 24 inches wide, provide 50 lb load capacity.
  - 4. General purpose drawers more than 3 inches high, but not more than 6 inches high and not more than 24 inches wide, provide 75 lb load capacity.
  - 5. File drawers more than 6 inches high or more than 24 inches wide, provide 100 lb load capacity.
  - 6. Lateral file drawers more than 6 inches high and more than 24 inches but not more than 30 inches wide, provide 150 lb load capacity.
  - 7. Lateral file drawers more than 6 inches high and more than 30 inches wide, provide 200 lb load capacity.
- K. Door Locks: ANSI/BHMA A156.11, E07121.
- L. Drawer Locks: ANSI/BHMA A156.11, E07041.
- M. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.
  - 1. Grommets for Cable Passage: 2-inchOD, molded-plastic grommets and matching plastic caps with slot for wire passage Color: Black.

- N. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for BHMA finish number indicated.
  - 1. Satin Chromium Plated: ANSI/BHMA 626 for brass or bronze base; ANSI/BHMA 652 for steel base.
- O. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

## **2.5 MISCELLANEOUS MATERIALS**

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, Fire-retardant-treated softwood lumber, kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

## **2.6 FABRICATION**

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate architectural cabinets to dimensions, profiles, and details indicated. Ease edges and corners to 1/16-inch radius unless otherwise indicated.
- C. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
  - 1. Trial fit assemblies at manufacturer's shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- D. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

### **3.2 INSTALLATION**

- A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.

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- C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with cabinet surface.
  - 1. For shop-finished items, use filler matching finish of items being installed.
- D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
  - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
  - 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
  - 3. Maintain veneer sequence matching of cabinets with transparent finish.
  - 4. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips.
- E. Shop Finishes: Touch up finishing after installation of architectural cabinets. Fill nail holes with matching filler.
  - 1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.
- F. Field Finishing: See Section 099123 "Interior Painting" and Section 099300 "Staining and Transparent Finishing" for finishing of installed architectural cabinets.

**3.3 ADJUSTING AND CLEANING**

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces. Touch up finishes to restore damaged or soiled areas.

**END OF SECTION 064113**

**SECTION 064116**

**PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Plastic-laminate-clad architectural cabinets.
  - 2. Cabinet hardware and accessories.
  - 3. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-clad architectural cabinets that are not concealed within other construction.
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets that are concealed within other construction before cabinet installation.

**1.3 COORDINATION**

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to support loads imposed by installed and fully loaded cabinets.
- B. Hardware Coordination: Distribute copies of approved hardware schedule specified in Section 087100 "Door Hardware" to manufacturer of architectural cabinets; coordinate Shop Drawings and fabrication with hardware requirements.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings:
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Show large-scale details.
  - 3. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.
  - 4. Show locations and sizes of cutouts and holes for items installed in plastic-laminate architectural cabinets.
  - 5. Apply AWI Quality Certification Program label to Shop Drawings.
- C. Samples for Verification: For the following:
  - 1. Plastic Laminates: 8 by 10 inches, for each type, color, pattern, and surface finish required.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For manufacturer.
- B. Product Certificates: For the following:
  - 1. High-pressure decorative laminate.

**1.6 CLOSEOUT SUBMITTALS**

- A. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.

**1.7 QUALITY ASSURANCE**

- A. Manufacturer's Qualifications: 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. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

**1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Do not deliver cabinets until painting and similar finish operations that might damage architectural cabinets have been completed in installation areas. Store cabinets in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

**1.9 FIELD CONDITIONS**

- A. Environmental Limitations without Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.
- B. 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/concealed by construction, and indicate measurements on Shop Drawings.

**PART 2 - PRODUCTS**

**2.1 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS**

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of cabinets indicated for construction, finishes, installation, and other requirements.
- B. Architectural Woodwork Standards Grade: Custom.
- C. Type of Construction: Face frame.
- D. Door and Drawer-Front Style: Flush overlay.
- E. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following: Refer to drawings for location/manufacturer color used.
    - a. Wilsonart, LLC. – Zanzibar 7957K-78 – Linearity Finish  
Asian Sand 7952K-18 - Linearity Finish
  - 2. Laminate Cladding for Exposed Surfaces:
  - 3. Postformed Surfaces: Grade HGP.
  - 4. Vertical Surfaces: Grade HGS
  - 5. Edges: Grade HGSPVC tape, 0.018-inch minimum thickness, matching laminate in color, pattern, and finish

6. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels or as indicated by drawings and Interior Designer. .
- F. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
  1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.
- G. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
  1. As indicated by laminate manufacturer's designations.
  2. As selected by Interior Designer from laminate manufacturer's full range in the following categories:
    - a. Wood grains, matte finish.
    - b. Patterns, matte finish.

## 2.2 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets except for items specified in Section 087100 "Door Hardware".
- B. Butt Hinges: 2-3/4-inch, five-knuckle steel hinges made from 0.095-inch-thick metal, and as follows:
  1. Semiconcealed Hinges for Flush Doors: ANSI/BHMA A156.9, B01361.
- C. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 100 degrees of opening To be installed when cabinets are located in public or profile areas as per Drawings.
- D. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.
- E. Wire Pulls: Back mounted, solid metal, 5 inches long, 2-1/2 inches deep, and 5/16 inch in diameter.
- F. Catches: Magnetic catches, ANSI/BHMA A156.9, B03141.
- G. Adjustable Shelf Standards and Supports: ANSI/BHMA A156.9, B04071; with shelf rests, B04081
- H. Shelf Rests: ANSI/BHMA A156.9, B04013; metal.
- I. Drawer Slides: ANSI/BHMA A156.9.
  1. Grade 1 and Grade 2: Side mounted and extending under bottom edge of drawer.
    - a. Type: Full extension.
    - b. Material: Zinc-plated steel with polymer rollers.
  2. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides.
  3. For drawers not more than 3 inches high and not more than 24 inches wide, provide Grade 2.
  4. For drawers more than 3 inches high, but not more than 6 inches high and not more than 24 inches wide, provide Grade 1.
  5. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-100.
  6. For trash bins not more than 20 inches high and 16 inches wide, provide Grade 1HD-100.
- J. Door Locks: ANSI/BHMA A156.11, E07121.
- K. Drawer Locks: ANSI/BHMA A156.11, E07041.

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- L. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.
- M. Grommets for Cable Passage: 2-inch OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
  - 1. Color: Black.
- N. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for ANSI/BHMA finish number indicated.
  - 1. Satin Chromium Plated: ANSI/BHMA 626 for brass or bronze base; ANSI/BHMA 652 for steel base.
- O. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

### **2.3 MISCELLANEOUS MATERIALS**

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.
  - 1. Adhesive for Bonding Edges: Hot-melt adhesive.

### **2.4 FABRICATION**

- A. Fabricate architectural cabinets to dimensions, profiles, and details indicated.
- B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
  - 1. Trial fit assemblies at manufacturer's shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

### **3.2 INSTALLATION**

- A. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to extent that it was not completed in the shop.
- C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with wafer-head cabinet installation screws.
- D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
  - 1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips] or No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

**3.3 ADJUSTING AND CLEANING**

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects. Where not possible to repair, replace architectural cabinets. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces.

**END OF SECTION 064116**



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**SECTION 064216**  
**FLUSH WOOD PANELING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Flush wood paneling (wood-veneer wall surfacing).
2. Fire-retardant-treated materials.
3. Installation materials.

B. Related Requirements:

1. .
2. Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing paneling that is concealed within other construction before paneling installation.

**1.2 COORDINATION**

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

**1.3 ACTION SUBMITTALS**

A. Product Data: For each type of product.

1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings: For flush wood paneling.

1. Include plans, elevations, sections, and attachment details.
2. Show details full size.
3. Show locations and sizes of furring and blocking, including concealed blocking specified in other Sections.
4. For paneling produced from premanufactured sets, show finished panel sizes, set numbers, sequence numbers within sets, and method of cutting panels to produce indicated sizes.
5. For paneling veneered in fabrication shop, show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.

C. Samples: For each exposed product and for each color and finish specified, in manufacturer's or fabricator's standard size.

D. Samples for Initial Selection: For each type of exposed finish.

E. Samples for Verification: For the following:

1. Lumber for Transparent Finish: Not less than 5 inches wide by 12 inches long for each species and cut, finished on one side and one edge.

2. Veneer Leaves: Representative of and selected from flitches to be used for transparent-finished paneling.
3. Veneer-Faced Panel Products for Transparent Finish: 8 by 10 inches for each species and cut. Include at least one face-veneer seam and finish as specified.

#### **1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For [Installer.
- B. Product Certificates: For each type of product.
- C. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

#### **1.5 QUALITY ASSURANCE**

- A. Fabricator Qualifications: 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.
- B. Installer Qualifications: Fabricator of products.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Do not deliver paneling until painting and similar operations that might damage paneling have been completed in installation areas. Store paneling in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

#### **1.7 FIELD CONDITIONS**

- A. Environmental Limitations with Humidity Control: Do not deliver or install paneling until building is enclosed, wet-work is complete, and HVAC system is operating and will maintain temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.
- B. Field Measurements: Where paneling is 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 paneling by field measurements before being enclosed/concealed by construction and indicate measurements on Shop Drawings.
- C. Established Dimensions: Where paneling is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

### **PART 2 - PRODUCTS**

#### **2.1 PANELING, GENERAL**

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of flush wood paneling (wood-veneer wall surfacing) indicated for construction, finishes, installation, and other requirements.

#### **2.2 FLUSH WOOD PANELING (WOOD-VENEER WALL SURFACING)**

- A. Grade: Premium

- B. Wood Species and Cut: Walnut. Stained Mahogany. Match existing species and cut of wood veneer in areas of existing building.
- C. Veneer Matching Method:
  - 1. Adjacent Veneer Leaves: Pleasing (Random) match.
  - 2. Within Panel Face: Center-balance match.
  - 3. Adjacent Veneer Leaves and within Panel Face: Slip, center-balance, or book match.
- D. Panel-Matching Method:
  - 1. Made-to-order, sequence-matched panels within each separate area.
    - a. See Section 011000 "Summary" for requirements concerning fitches reserved by Architect.
- E. Vertical Panel-Matching Method: Continuous end match; veneer leaves of upper panels are continuations of veneer leaves of lower panels
- F. Panel Core Construction: MD. Fire-retardant particleboard or fire-retardant MDF.
  - 1. Thickness: As indicated on Drawings
- G. Exposed Panel Edges: Inset solid-wood or wood-veneer matching faces.
- H. Assemble panels by gluing and concealed fastening.

## **2.3 MATERIALS**

- A. Materials, General: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.
- B. Wood Moisture Content: 5 to 10 percent.
- C. Composite Wood Products: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.
  - 1. MDF: ANSI A208.2, Grade 130
  - 2. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

## **2.4 INSTALLATION MATERIALS**

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber kiln-dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls.
- C. Installation Adhesive: Product recommended by panel fabricator for each substrate for secure anchorage.

## **2.5 FABRICATION**

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Arrange paneling in shop or other suitable space in proposed sequence for examination by Architect. Mark units with temporary sequence numbers to indicate position in proposed layout.

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1. Lay out one elevation at a time if approved by Architect.
  2. Notify Architect seven days in advance of the date and time when layout will be available for viewing.
  3. Provide lighting of similar type and level as that of final installation for viewing layout unless otherwise approved by Architect.
  4. Rearrange paneling as directed by Architect until layout is approved.
  5. Do not trim end units and other nonmodular-size units to less than modular size until after Architect's approval of layout. Indicate trimming by masking edges of units with nonmarking material.
  6. Obtain Architect's approval of layout before start of assembly. Mark units and Shop Drawings with assembly sequence numbers based on approved layout.
- C. Complete fabrication, including assembly, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
1. Notify Architect seven days in advance of the dates and times paneling fabrication will be complete.

## **2.6 SHOP FINISHING**

- A. General: Finish paneling at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.
- B. Shop Priming: Shop apply the prime coat including backpriming, if any, for transparent-finished paneling specified to be field finished. See Section 099300 "Staining and Transparent Finishing" for material and application requirements.
- C. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing paneling, as applicable to each unit of work.
1. Backpriming: Apply two coats of sealer or primer, compatible with finish coats, to concealed surfaces of paneling.
- D. Transparent Finish:
1. Grade: Premium.
  2. Finish: System - 5, conversion varnish
  3. Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to woodwork made from closed-grain wood before staining and finishing.
  4. Staining: Match approved sample for color.
  5. Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.
  6. Filled Finish for Open-Grain Woods: After staining, apply wash-coat sealer and allow to dry. Apply paste wood filler and wipe off excess. Tint filler to match stained wood.
  7. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D523.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Before installation, condition paneling to humidity conditions in installation areas.
- B. Before installing paneling, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

### **3.2 INSTALLATION**

- A. Grade: Install paneling to comply with quality standard grade of paneling to be installed.
- B. Install paneling level, plumb, true in line, and without distortion. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches. Install with no more than 1/16 inch in 96-inch vertical cup or bow and 1/8 inch in 96-inch horizontal variation from a true plane.
  - 1. For flush paneling with revealed joints, install with variations in reveal width, alignment of top and bottom edges, and flushness between adjacent panels not exceeding 1/16 inch.
- C. Anchor paneling to supporting substrate with concealed panel-hanger clips.
  - 1. Do not use face fastening unless otherwise indicated.
- D. Complete finishing work specified in this Section to extent not completed at shop or before installation of paneling. Fill nail holes with matching filler where exposed.
  - 1. Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.
- E. See Section 099300 "Staining and Transparent Finishing" for final finishing of installed paneling.

### **3.3 ADJUSTING AND CLEANING**

- A. Repair damaged and defective paneling, where possible, to eliminate defects. Where not possible to repair, replace paneling. Adjust for uniform appearance.
- B. Clean paneling on exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

**END OF SECTION 064216**

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**SECTION 066100**

**ARCHITECTURAL FIBERGLASS CORNICE**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
1. Fabrication of fiberglass – reinforced polyester cornice profiles.
- B. Related Documents and Sections:
1. General Conditions, Supplementary Conditions and Division 1 General Requirements apply to the work of this section.
  2. Section 051200 “Structural Steel”
  3. Section 061000, “Rough Carpentry”, for blocking.
  4. Section 079200, “Joint Sealants”.

**1.02 QUALITY ASSURANCE**

- A. The fiberglass manufacturer shall be one who is currently in the business of manufacturing and supplying architectural fiberglass components for the building construction industry and who can demonstrate the capability.
- B. The fiberglass manufacturer shall have been engaged in the fiberglass industry for at least 10 years doing work with projects comparable in size, scope, detail, and complexity to that shown and specified.
- C. Submit a list of comparable projects, locations, and owner contacts with bid documents.
- D. Submit manufacturer’s current valid certification with The Certified Composites Technician (CCT) program created by the American Composites Manufacturer’s Association (ACMA).
- E. Submit manufacturer’s internal Quality Control & Assurance Procedures based on provisions published in the “Guidelines and Recommended Practices for Fiberglass Reinforced Plastic Architectural Products”.
- F. Single Source Responsibility for Architectural Fiberglass: Obtain architectural fiberglass from a single source with resources to provide products complying with requirements indicated without delaying the work.
- G. Fire Test Response Characteristics: Provide architectural fiberglass and related materials with fire test response characteristics as specified elsewhere in this section as determined by testing identical products per test method ASTM E-84 or other testing and inspecting agency acceptable to authorities having jurisdiction. Provide written certification that supplied architectural fiberglass panels meets or exceeds the criteria.
- H. Manufacturer’s Vendor Approved Manufacturing Program (VAMP). Vendor shall have certified documentation regarding manufacturing processes and materials from a recognized vendor in the composites industry.



**1.03 DESIGN REQUIREMENTS**

- A. Installed architectural fiberglass cornice and fastening systems shall be designed, engineered, fabricated, and installed to conform to the state codes, local codes, and the Architect's design. Match the pattern, color, and dimensions of the existing architectural fiberglass cornices on the existing building.

**1.04 SUBMITTALS**

A. Qualification Data

For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

B. Product Data:

For products of standard manufacture, not custom fabricated for this work, submit manufacturer's catalog illustrations, specifications, anchor details and installation instructions.

C. Color Selection:

Submit custom color sample selection chips of actual material showing color, texture and sheen available for initial review.

Architect may supply custom paint color sample for matching.

D. Shop Drawings:

Submit shop drawings for fabrication and erection. Include plans, elevations, sections, profiles, and details of cornice panels. Indicate dimensions of each profile and component. Include for comparison a dimensioned drawing showing plan elevation section and details of existing cornice section used for model purposes if applicable. Indicate those features, which differ from fiberglass replication. Include details for panel connections, anchorage to substructure and all miscellaneous accessories. Show all special corner pieces, splices for panels and inside corner transitions and terminations for panels. Provide layout drawings including seam locations for each elevation.

E. Samples:

For each cornice type submit sample cornice panel section, large enough to include all panel features including joints. Construct sample panel to show all connection points, embedded connection and reinforcing clips, include typical fasteners to complete the submission.

F. Submit detailed maintenance instructions for inclusion in final operation and maintenance manuals.

G. Submit warranty on completed fiberglass components in writing against defects of materials and workmanship and to meet the specified requirements of this Section for a period of one (1) year from delivery to site.

H. Submit documentation showing bond ability, client references, trade references, evidence of insurance coverage.

### **1.05 VERIFICATION OF CONDITIONS**

- A. Prior to proceeding with any work, Contractor to carefully check and verify all pertinent dimensions on the project drawings and the Contractor shall verify on site dimension and assume full responsibility for fitting the components to the structure.
- B. The components indicated on the drawings show dimensions established to accomplish the Architect's intended visual result and to conform to the building's configuration. The Contractor shall verify that the components to be actually provided for the work of this Section will fit the building's structural elements and conform to the visual design criteria indicated on the drawings without materially altering profiles and alignments.
- C. Any additional support or backing for the components shall be provided and installed by the Installation Contractor as part of the work of this section.
- D. Prior to commencement of work review the job site before selective demolition begins to determine the layout, spacing and termination of the existing cornice. Duplicate these layouts intersections and relationships in so far as practical. Identify and resolve panel detail conflicts in advance and identify such condition and resolutions on the shop drawings.
- E. Carefully measure each existing cornice assembly component and replicate size, profile, position, and detail in the finished panel so far as practical. Indicate on shop drawings those indentations and/or detail which cannot be duplicated in the replication due to physical limitations of the manufacturing process.

### **1.06 PERFORMANCE CRITERIA**

#### **A. Structural Properties**

The fiberglass reinforced polyester components shall be engineered, fabricated and erected to conform to the specifications and applicable requirements as specified by local codes to fit the building structure and to conform to the Architect's design criteria.

### **1.07 WARRANTY**

The work of this Section shall be guaranteed in writing against defects of materials and workmanship and to meet the specified requirements of this Section for a period of one (1) year from delivery to site. Additionally, all manufacturers guarantee for materials will be passed on to customer.

## **PART 2 – PRODUCTS**

### **2.01 ACCEPTABLE MANUFACTURERS**

- A. EDON Composites, LLC  
1160 Easton Road  
Horsham, PA 19044  
Phone: 1(215) 672-8050  
Website: edon.com
- B. Architectural Fiberglass, Inc.  
8300 Bessemer Ave, Cleveland, Ohio 44127  
1-888-483-1775, 216-641-8300, 216-641-8150 Fax  
Website: [www.fiberglass-afi.com](http://www.fiberglass-afi.com) e-mail: [sales@fiberglass-afi.com](mailto:sales@fiberglass-afi.com)

Subject to compliance with requirements, fiberglass manufacturer offering products that may be incorporated in work include:

## **2.02 PATTERNS, MOCK-UPS AND MOLDS**

- A. Upon approval by the Architect of the shop drawings, inspection of the patterns, , and/or molds shall be approved by the Architect on-site or at the facilities of the fiberglass manufacturer.
- B. Patterns and mock-ups shall be hand carved and machined by skilled craftsmen who have a minimum of ten (10) years experience in fabrication of Architectural Exterior and Interior Trim and Facade components and/or related design projects.
- C. Molds shall be constructed of from 10-12 layers of glass fibers with tooling gel-coat and/or rubber molds and shall be fabricated by skilled craftsmen with a minimum of ten to twelve (10-12) years experience in fabricating of architectural components for similar projects.
- D. Production molds shall be constructed from successive layers of glass fiber with tooling gel coat or alternately from rubber molds. Molds shall be constructed with sufficient thickness and rigidity to prevent deflection, warpage and defects during panel production.

## **2.03 FIBERGLASS AND RESIN MATERIALS**

- A. General: The fiberglass reinforced polyester plastic components shall be designed, fabricated and erected to conform to the state of Building Code, Local Codes and to the Architect's design criteria.
- B. Glass cloth, matt and "chop" shall be equal to the products of PPG-Owens Corning.
- C. Polyester resins shall be equal to Class A, Edon Spec 67. The resin shall be flame retardant, promoted thixotropic polyester resin designed for use in hand laid up and spraying processes. The resin shall be specifically formulated for use in applications that require an ASTM E 84, Class I flame spread rating, without the use of fillers or antimony trioxide, with an ASTM E 84 flame spread rating of 25 unfilled smoke density of 450 or under.
- D. Gel Coat: The gel coat shall be a high-performance product with ultraviolet inhibitors as recommended by the gel coat and fiberglass panel manufacturer.

Acceptable products are:

1. LHM2900 Low Hap HydroShield Lite NPG ISO Marine Gelcoat by HK Research, 908 Lenoir Road, Hickory, NC 28603, (800) 334-5975
  2. "951-Armorcote IMC" by Cook Composites and Polymers Co., P. O. Box 419389, Kansas City, MO 64141-6389, (816) 391-6000.
  3. "Max-Guard" Series by Ashland Inc., 2 Joy Drive, Budd Lake, NJ 07828, (908) 850-3046
  4. "Ultra Shield-NPG" by Ferro Corporation, 6060 Parkland Blvd., Mayfield Heights, OH 44124 (216) 875-5600
- E. Gel coat thickness shall be 0.015" minimum to 0.025" maximum.

## **2.04 PANEL FABRICATION**

- A. Fiberglass-reinforced polyester cornice sections shall be manufactured using the specified resins, reinforced with chopped glass fibers. All exposed surfaces shall be finished with custom colored gel-coat
- B. Internal metal reinforcement, anchorage clips, brackets and all other "built-in" accessories shall be captured and additionally reinforced with additional glass fiber and mat of sufficient thickness as required by the panel manufacturers design.
- C. Final ratio of materials shall be 25% fiber, 75% resin for body of components.
- D. Any foam reinforcing equal to Divinycel H-60
- E. All metal hardware, both loose and embedded, shall be stainless steel or aluminum as designed by manufacturer. All fasteners to be stainless steel.
- F. Component thickness shall be 1/8- 3/16" minimum. For any sandwich core construction 7/16" minimum.
- G. Gel-coated thickness shall be .015" to .025".
- H. Finished components shall be true to line in the shapes indicated on the drawings, free of warps, twists, waves or distortion.
- I. Joints in components shall be matched at the factory and numbered for field installation. Components shall be fabricated to minimize exposed fasteners.
- J. Full-size models and mock-ups shall be hand carved and machined as required to produce the replication patterns.
- K. Form panel ends with sealable lap joints. Use lap joints with sufficient depth to accommodate mating and alignment of panel surfaces and panel-to-panel sealant components.
- L. Provide all special transition, corner pieces (inside and outside) and special closures necessary for a complete, visually continuous, weather tight installation.
  - 1. All inside and outside corners shall be shop fabricated. Fabrication of corners in field will not be permitted.
- M. Coordinate cutouts required for drain inlets, rainwater conductors and other penetrations. Reinforce panel as required and provide special formed closures to make joints and intersection weather tight.

## **PART 3 – EXECUTION**

### **3.01 HANDLING AND SHIPMENT**

- A. Provide shipping crates of sufficient size and strength to protect components during shipping or ship fiberglass components in padded dedicated moving van.
- B. Provide additional protection as may be necessary to prevent soiling of surfaces and marring of finish.

### 3.02 INSTALLATION

- A. Select installer who can demonstrate their experience in working with FRP. Provide installer with FRP manufacturer's final approved shop drawings, installation video / DVD, and written installation instructions
- B. FRP component assembly hardware to be provided by FRP manufacturer, Internal metal reinforcement anchorage clips, brackets, fasteners and stainless steel hardware to be supplied by contractor or installer.
- C. Coordinate required blocking for attachment of cornice panels to substructure. Provide additional, wood preservative treated or metal stud framing as may be required to attached and reinforce cornice panels for a solid installation.
  - 1. Coordinate installation with any metal gutter lining work or flashing above and wood/metal substrates.
- D. Erect cornice panels plumb, square and true to line and level. Follow fiberglass panel manufacturer's recommendations with regard to installation clearances, notches, and formation of panel-to-panel joints.
- E. Position supports and anchorage devices and set fiberglass components in place prior to securing fasteners.
- F. Install sealant and accessories as work progresses, so as to make the work weather tight.
- G. Provide each panel with joints such that adjacent panels mate to produce flush joints. Recess blocking or notch continuously behind each panel joint. Set panels to ensure a maximum joint thickness of 3/8".
- H. Prepare each cornice panel section for installation by carefully sanding joints and shrinkages where blocking occurs to assure a tight flush fit.
- I. Fill joints with a continuous bead of sealant, tooling finished joints to a slightly concave profile ensuring complete filling and flush installation.
- J. Carefully monitor ambient temperatures at time of panel installation and observe all panel-to-panel clearances recommended by the fiberglass manufacturer.
- K. Do not cut or abrade finishes, which cannot be completely restored in the field. Installer to make small inconspicuous finish repairs using manufacturer's color matching gel fill finish. If too large of a repair is needed, return to fiberglass manufacturer for alterations or new units.
- L. Use only stainless steel connectors approved by the panel manufacturer and which will develop the strength required by fiberglass panel manufacturer's calculations. The installer shall supply these connectors.
- M. Countersink all exposed fasteners. Patch all attachment holes with gel fill finish supplied by the fiberglass panel manufacturer for field application. Finish attachment points so that there is no detectable difference in the completed panel surface.
- N. Clean installed panel to remove all dirt, smudges, and construction dirt. Use only those cleaning products and procedures recommended by the fiberglass manufacturer.
- O. For components requiring field painting after installation, use quality primer and paint as recommended by paint manufacturer

**FIBERGLASS REINFORCED POLYESTER (F. R. P.)**

FLAME RETARDANT RESINS, Class 1. Offers a wide variety of flame retardant properties.

Engineered specifically for building products and a myriad of other interior and outdoor applications. Meets the most exacting requirements of local fire codes, BOCA, DOT and other, government specifications.

**TYPICAL PHYSICAL PROPERTIES**

Properties	1/8" Unfilled Casting	1/8" Glass Laminate
Flexural Strength, psi 77°F	16,000	30,000
Flexural Modulus, psi x 10 <sup>6</sup> , 77°F	0.48	1.3
Tensile Strength, psi 77°F	8,700	18,000
Elongation, %	2.2	-
Barcol Hardness	45	50-55
Glass Content, %	-	29.8

**FLAMMABILITY PROPERTIES\***

(1/8- Glass Mat Laminate)

ASTME-84 (tunnel test) flame spread .....	less than 25 (unfilled)
smoke density.....	less than 450 (unfilled)
H LT- 1 5 Rating .....	100
ASTM D-635-74.....	AEB<1.0 CM
.....	ATB<5 sec.
ASTM D-2863-74 (Oxygen Index).....	36.5

**END OF SECTION 066100**

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**SECTION 070150.19**

**PREPARATION FOR REROOFING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Full tear-off of entire roof system.
  - 2. Re-cover preparation of entire roof area.
  - 3. Removal of flashings and counterflashings.
  
- B. Related Requirements:
  - 1. Section 011000 "Summary" for use of premises and for phasing requirements.
  - 2. Section 015000 "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for reroofing preparation.

**1.3 DEFINITIONS**

- A. EPS: Molded (expanded) polystyrene.
- B. Full Roof Tear-off: Removal of existing roofing system down to existing roof deck.
- C. ISO: Polyisocyanurate board insulation.
- D. Roofing Terminology: Definitions in ASTM D1079 and glossary of NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to work of this Section.

**1.4 PREINSTALLATION MEETINGS**

- A. Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site.
  - 1. Meet with Owner, Architect, Contractor, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  - 2. Review methods and procedures related to roofing tear-off, including, but not limited to, the following:
    - a. Reroofing preparation, including roofing system manufacturer's written instructions.
    - b. Temporary protection requirements for existing roofing system components that are to remain.
    - c. Existing roof drains and roof drainage during each stage of reroofing, and roof-drain plugging and plug removal.
    - d. Construction schedule and availability of materials, Installer's personnel, equipment, and facilities needed to avoid delays.



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- e. Existing roof deck conditions requiring Architect notification.
- f. Existing roof deck removal procedures and Owner notifications.
- g. Condition and acceptance of existing roof deck and base flashing substrate for reuse.
- h. Base flashings, special roofing details, drainage, penetrations, equipment curbs, and condition of other construction that affect reroofing.
- i. HVAC shutdown and sealing of air intakes.
- j. Shutdown of fire-suppression, -protection, and -alarm and -detection systems.
  
- k. Governing regulations and requirements for insurance and certificates if applicable.
- l. Existing conditions that may require Architect notification before proceeding.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
  - 1. Include certificate that Installer is approved by warrantor of existing roofing system.
  - 2. Include certificate that Installer is licensed to perform asbestos abatement.
- B. Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including exterior and interior finish surfaces, that might be misconstrued as having been damaged by reroofing operations.
  - 1. Submit before Work begins.

**1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: Approved by warrantor of existing roofing system to work on existing roofing and licensed to perform asbestos abatement in the state or jurisdiction where Project is located.
- B. Regulatory Requirements:
  - 1. Comply with governing EPA notification regulations before beginning roofing removal.
  - 2. Comply with hauling and disposal regulations of authorities having jurisdiction.

**1.7 FIELD CONDITIONS**

- A. Existing Roofing System: -modified bituminous [TPO and architectural shingle roofing.
- B. Owner will occupy portions of building immediately below reroofing area.
  - 1. Conduct reroofing so Owner's operations are not disrupted.
  - 2. Provide Owner with not less than 72 hours' written notice of activities that may affect Owner's operations.
  - 3. Coordinate work activities daily with Owner so Owner has adequate advance notice to place protective dust and water-leakage covers over sensitive equipment and furnishings, shut down HVAC and fire-alarm or -detection equipment if needed, and evacuate occupants from below work area.
- C. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.
- D. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.

- E. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.
  - 1. Remove only as much roofing in one day as can be made watertight in the same day.

## **PART 2 - PRODUCTS**

### **2.1 TEMPORARY PROTECTION MATERIALS**

- A. EPS Insulation: ASTM C578.
- B. Plywood: DOC PS 1, Grade CD, Exposure 1.
- C. OSB: DOC PS 2, Exposure 1.

### **2.2 TEMPORARY ROOFING MATERIALS**

- A. Design and selection of materials for temporary roofing are Contractor's responsibilities.

### **2.3 INFILL AND REPLACEMENT MATERIALS**

- A. Use infill materials matching existing roofing system materials unless otherwise indicated.
  - 1. Infill materials are specified in Section 074113.16 Standing-Seam Metal Roof Panels and Section 075423 "Thermoplastic-Polyolefin (TPO) Roofing" unless otherwise indicated.
- B. Steel deck is specified in Section 053100 "Steel Decking."
- C. Wood blocking, curbs, and nailers are specified in Section 061000 "Rough Carpentry."
- D. Plywood roof sheathing is specified in Section 061600 "Sheathing."
- E. Fasteners: Factory-coated steel fasteners with metal or plastic plates listed in FM Approvals' RoofNav, and acceptable to new roofing system manufacturer.

### **2.4 AUXILIARY REROOFING MATERIALS**

- A. General: Use auxiliary reroofing preparation materials recommended by roofing system manufacturer for intended use and compatible with components of new roofing system.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Protection of In-Place Conditions:
  - 1. Limit traffic and material storage to areas of existing roofing that have been protected.
  - 2. Maintain temporary protection and leave in place until replacement roofing has been completed. Remove temporary protection on completion of reroofing.
- B. Seal or isolate windows that may be exposed to airborne substances created in removal of existing materials.
- C. Shut off rooftop utilities and service piping before beginning the Work.
- D. Test existing roof drains to verify that they are not blocked or restricted.

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1. Immediately notify Architect of any blockages or restrictions.
- E. Coordinate with Owner to shut down air intake equipment in the vicinity of the Work.
  1. Cover air-intake louvers before proceeding with reroofing work that could affect indoor air quality or activate smoke detectors in the ductwork.
- F. During removal operations, have sufficient and suitable materials on-site to facilitate rapid installation of temporary protection in the event of unexpected rain.
- G. Maintain roof drains in functioning condition to ensure roof drainage at end of each workday.
  1. Prevent debris from entering or blocking roof drains and conductors.
    - a. Use roof-drain plugs specifically designed for this purpose.
    - b. Remove roof-drain plugs at end of each workday, when no work is taking place, or when rain is forecast.
  2. If roof drains are temporarily blocked or unserviceable due to roofing system removal or partial installation of new roofing system, provide alternative drainage method to remove water and eliminate ponding.
    - a. Do not permit water to enter into or under existing roofing system components that are to remain.

### **3.2 ROOF TEAR-OFF**

- A. See Roof Demolition Plans.
- B. Lower removed roofing materials to ground and onto lower roof levels, using dust-tight chutes or other acceptable means of removing materials from roof areas.
  1. Discard EPS/ISO insulation.
- C. Full Roof Tear-off: Remove existing roofing and other roofing system components down to the existing roof deck.
  1. Remove substrate board, vapor retarder ,roof insulation and cover board.
  2. Remove base flashings and counter flashings.
  3. Remove perimeter edge flashing.
  4. Remove copings.
  5. Remove expansion-joint covers.
  6. Remove flashings at pipes, curbs, mechanical equipment, and other penetrations.
  7. Remove roof drains indicated on Drawings to be removed.
  8. Remove wood blocking, curbs, and nailers.

### **3.3 DECK PREPARATION**

- A. Inspect deck after tear-off of roofing system.
- B. If broken or loose fasteners that secure deck panels to one another or to structure are observed, or if deck appears or feels inadequately attached, remove and replace with in kind material.
- C. If deck surface is unsuitable for receiving new roofing or if structural integrity of deck is suspect, remove and replace with in kind material.
- D. Replace plywood roof sheathing as indicated on Drawings.

### **3.4 INFILL MATERIALS INSTALLATION**

- A. Immediately after roof tear-off, and inspection and repair, if needed, of deck, fill in tear-off areas to match existing roofing system construction.
  - 1. Installation of infill materials is specified in Section 074113.16 Standing-Seam Metal Roof Panels and Section 075423 "Thermoplastic-Polyolefin (TPO) Roofing."
  - 2. Installation of wood blocking, curbs, and nailers is specified in Section 061000 "Rough Carpentry."
- B. Install new roofing patch over roof infill area.
  - 1. If new roofing is installed the same day tear-off is made, roofing patch is not required.

### **3.5 BASE FLASHING REMOVAL**

- A. Remove existing base flashings.
  - 1. Clean substrates of contaminants, such as asphalt, sheet materials, dirt, and debris.
- B. Do not damage metal counterflashings that are to remain.
  - 1. Replace metal counterflashings damaged during removal with counterflashings of same metal, weight or thickness, and finish as existing, or specified in Section 076200 "Sheet Metal Flashing and Trim."
- C. When directed by Architect, replace parapet framing, wood blocking, curbs, and nailers to comply with Section 061000 "Rough Carpentry."

### **3.6 DISPOSAL**

- A. Collect demolished materials and place in containers.
  - 1. Promptly dispose of demolished materials.
  - 2. Do not allow demolished materials to accumulate on-site.
  - 3. Storage or sale of demolished items or materials on-site is not permitted.
- B. Transport and legally dispose of demolished materials off Owner's property.

**END OF SECTION 070150.19**

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**SECTION 071900**

**WATER REPELLENTS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes penetrating water-repellent treatments for the following vertical and horizontal surfaces:
  - 1. Cast-in-place concrete.
  - 2. Cast stone.
  - 3. Concrete unit masonry.
  - 4. Clay brick masonry.
  - 5. Stone Masonry Veneer.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include manufacturer's printed statement of VOC content.
  - 2. Include manufacturer's recommended number of coats for each type of substrate and spreading rate for each separate coat.
- B. Samples: For each type of water repellent and substrate indicated, 12 by 12 inches in size, with specified water-repellent treatment applied to half of each Sample.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product Certificates: For each type of water repellent.
- B. Preconstruction Test Reports: For water-repellent-treated substrates.
- C. Field quality-control reports.
- D. Sample Warranty: For special warranty.

**1.5 QUALITY ASSURANCE**

- A. Applicator Qualifications: An employer of workers trained and approved by manufacturer.

**1.6 FIELD CONDITIONS**

- A. Limitations: Proceed with application only when the following existing and forecasted weather and substrate conditions permit water repellents to be applied according to manufacturers' written instructions and warranty requirements:
  - 1. Concrete surfaces and mortar have cured for not less than 28 days.
  - 2. Building has been closed in for not less than 30 days before treating wall assemblies.
  - 3. Ambient temperature is above 40 deg F and below 100 deg F and will remain so for 24 hours.

4. Substrate is not frozen and substrate-surface temperature is above 40 deg F and below 100 deg F.
5. Rain or snow is not predicted within 24 hours.
6. Not less than seven days have passed since surfaces were last wet.
7. Windy conditions do not exist that might cause water repellent to be blown onto vegetation or surfaces not intended to be treated.

## 1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agree(s) to repair or replace materials that fail to maintain water repellency specified in "Performance Requirements" Article within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Performance: Water repellents shall meet the following performance requirements as determined by testing on manufacturer's standard substrates representing those indicated for this Project.
- B. Water Absorption: Minimum 80percent reduction of water absorption after 24 hours for treated compared to untreated specimens when tested according to the following:
1. Cast-in-Place Concrete: ASTM C642.
  2. Cast Stone: ASTM C1195.
  3. Concrete Masonry Units: ASTM C140.
  4. Clay Brick: ASTM C67.
- C. Water-Vapor Transmission: Comply with one or both of the following:
1. Maximum 10 percent reduction water-vapor transmission of treated compared to untreated specimens, according to ASTM E96/E96M.
  2. Minimum 80 percent water-vapor transmission of treated compared to untreated specimens, according to ASTM D1653.
- D. Water Penetration and Leakage through Masonry: Minimum 90 percent reduction in leakage rate of treated compared to untreated specimens, according to ASTM E514/E514M.
- E. Durability: Maximum 5percent loss of water-repellent performance after 2500 hours of weathering according to ASTM G154 compared to water-repellent-treated specimens before weathering.

### 2.2 PENETRATING WATER REPELLENTS

- A. Silane, Penetrating Water Repellent: Clear, containing 20 percent or more solids of alkyl trialkoxysilanes; with alcohol, mineral spirits, water, or other proprietary solvent carrier; and with 400 g/L or less of VOCs.
1. 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:
    - a. BASF Corporation.

- b. Euclid Chemical Company (The); an RPM company.
- c. PROSOCO, Inc.
- d. W.R. Meadows, Inc.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements and conditions affecting performance of the Work.
  - 1. Verify that surfaces are clean and dry according to water-repellent manufacturer's requirements. Check moisture content in three representative locations by method recommended by manufacturer.
  - 2. Verify that there is no efflorescence or other removable residues that would be trapped beneath the application of water repellent.
  - 3. Verify that required repairs are complete, cured, and dry before applying water repellent.
- B. Test pH level according to water-repellent manufacturer's written instructions to ensure chemical bond to silica-containing or siliceous minerals.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. New Construction and Repairs: Allow concrete and other cementitious materials to age before application of water repellent, according to repellent manufacturer's written instructions.
- B. Cleaning: Before application of water repellent, clean substrate of substances that could impair penetration or performance of product according to water-repellent manufacturer's written instructions and as follows:
  - 1. Cast-in-Place Concrete Cast Stone and Concrete Unit Masonry: Remove oil, curing compounds, laitance, and other substances that inhibit penetration or performance of water repellents according to ASTM E1857
  - 2. Clay Brick Masonry: ASTM D5703. Section 040310"Historic Masonry Cleaning."
- C. Protect adjoining work, including mortar and sealant bond surfaces, from spillage or blow-over of water repellent. Cover adjoining and nearby surfaces of aluminum and glass if there is the possibility of water repellent being deposited on surfaces. Cover live vegetation.
- D. Coordination with Mortar Joints: Do not apply water repellent until pointing mortar for joints adjacent to surfaces receiving water-repellent treatment has been installed and cured.
- E. Coordination with Sealant Joints: Do not apply water repellent until sealants for joints adjacent to surfaces receiving water-repellent treatment have been installed and cured.
  - 1. Water-repellent work may precede sealant application only if sealant adhesion and compatibility have been tested and verified using substrate, water repellent, and sealant materials identical to those required.

#### **3.3 APPLICATION**

- A. Apply coating of water repellent on surfaces to be treated using 15 psi-pressure spray with a fan-type spray nozzle, roller or brush to the point of saturation. Apply coating in dual passes of uniform, overlapping strokes. Remove excess material; do not allow material to puddle beyond saturation. Comply with manufacturer's written instructions for application procedure unless otherwise indicated.



- B. Apply a second saturation coating, repeating first application. Comply with manufacturer's written instructions for limitations on drying time between coats and after rainstorm wetting of surfaces between coats. Consult manufacturer's technical representative if written instructions are not applicable to Project conditions.

### **3.4 FIELD QUALITY CONTROL**

- A. Testing of Water-Repellent Material: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when water repellent is being applied:
  - 1. Owner will engage the services of a qualified testing agency to sample water-repellent material being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
  - 2. Testing agency will perform tests for compliance of water-repellent material with product requirements.
- B. Coverage Test: In the presence of Architect, hose down a dry, repellent-treated surface to verify complete and uniform product application. A change in surface color will indicate incomplete application.
  - 1. Notify Architect seven (7) days in advance of the dates and times when surfaces will be tested.
  - 2. Reapply water repellent until coverage test indicates complete coverage.

### **3.5 CLEANING**

- A. Immediately clean water repellent from adjoining surfaces and surfaces soiled or damaged by water-repellent application as work progresses. Correct damage to work of other trades caused by water-repellent application, as approved by Architect.
- B. Comply with manufacturer's written cleaning instructions.

**END OF SECTION 071900**

## SECTION 072100

### THERMAL INSULATION

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Extruded polystyrene foam-plastic board insulation.
  - 2. Molded (expanded) polystyrene foam-plastic board insulation.
  - 3. Polyisocyanurate foam-plastic board insulation.
  - 4. Glass-fiber blanket insulation.
  - 5. Mineral-wool blanket insulation.
- B. Related Requirements:
  - 1. Section 075423 "Thermoplastic-Polyolefin (TPO) Roofing".
  - 2. Section 092900 "Gypsum Board" for sound attenuation blanket used as acoustic insulation.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For the following:
  - 1. Extruded polystyrene foam-plastic board insulation.
  - 2. Molded (expanded) polystyrene foam-plastic board insulation.
  - 3. Polyisocyanurate foam-plastic board insulation.
  - 4. Glass-fiber blanket insulation.
  - 5. Mineral-wool blanket insulation.

##### 1.4 INFORMATIONAL SUBMITTALS

- A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.

##### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect foam-plastic board insulation as follows:
  - 1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
  - 2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
  - 3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

## **PART 2 - PRODUCTS**

### **2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION**

- A. Extruded Polystyrene Board Insulation, Type IV, Drainage Panels ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced; fabricated with shiplap or channel edges and with one side having grooved drainage channels.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle Syntec Systems.
    - b. CertainTeed Insulation.
    - c. Dow Chemical Company.
    - d. Owens Corning.
  2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  3. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
  4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

### **2.2 MOLDED (EXPANDED) POLYSTYRENE FOAM-PLASTIC BOARD INSULATION**

- A. Molded (Expanded) Polystyrene Board Insulation, Type IX ASTM C578, Type IX, 25-psi minimum compressive strength.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle Syntec Systems.
    - b. CertainTeed Insulation.
    - c. Dow Chemical Company.
    - d. Owens Corning.
  2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

### **2.3 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION**

- A. Polyisocyanurate Board Insulation, Foil Faced ASTM C1289, foil faced, Type I, Class 1 or 2.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle Syntec Systems.
    - b. Atlas Roofing Corporation - Polyiso.
    - c. DuPont de Nemours, Inc.
    - d. Firestone Building Products.

- e. Johns Manville; a Berkshire Hathaway company.
2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- B. Polyisocyanurate Board Insulation, Glass-Fiber-Mat Faced ASTM C1289, glass-fiber-mat faced, Type II, Class 2.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Rmax/Sika: ECOMAXci FR
    - b. Carlisle Syntec Systems.
    - c. Atlas Roofing Corporation - Polyiso.
    - d. DuPont de Nemours, Inc.
    - e. Firestone Building Products.
    - f. Johns Manville; a Berkshire Hathaway company.
  2. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
  3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

#### **2.4 GLASS-FIBER BLANKET INSULATION**

- A. Glass-Fiber Blanket Insulation, Unfaced ASTM C665, Type I; passing ASTM E136 for combustion characteristics. Sound attenuation batts, 55 STC or better.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. CertainTeed Insulation.
    - b. Johns Manville: a Berkshire Hathaway Company.
    - c. Owens Corning.
  2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
  4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- B. Glass-Fiber Blanket Insulation, Foil -Scrim-Kraft Faced (FSK-25) >: ASTM C665, Type III (nonreflective faced), Class A (faced surface with a flame-spread index of 25); Category 1 (membrane is a vapor barrier). R-13 Batts,min.,
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. CertainTeed Corporation; Saint-Gobain North America.

- b. Johns Manville; a Berkshire Hathaway company.
  - c. Owens Corning.
2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- C. Glass-Fiber Blanket Insulation, Kraft Faced : ASTM C665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier). Sound attenuation batts, 55 STC or better.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. CertainTeed Corporation; Saint-Gobain North America.
    - b. Johns Manville; a Berkshire Hathaway company.
    - c. Owens Corning.
  2. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

## **2.5 MINERAL-WOOL BLANKET INSULATION**

- A. Mineral-Wool Blanket Insulation, Unfaced ASTM C665, Type I (blankets without membrane facing); consisting of fibers; passing ASTM E136 for combustion characteristics.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Owens Corning.
    - b. USG.
  2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
  4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
- B. Mineral-Wool Blanket Insulation, Reinforced-Foil Faced ASTM C665, Type III (reflective faced); Category 1 (membrane is a vapor barrier), faced with foil scrim, foil-scrim kraft, or foil-scrim polyethylene.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Owens Corning.
    - b. USG.
  2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
  3. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84
  - Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

## 2.6 INSULATION FASTENERS

- A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.
  - 1. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
  - 2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation.
- B. Adhesively Attached, Angle-Shaped, Spindle-Type Anchors: Angle welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.
  - 1. Angle: Formed from 0.030-inch-thick, perforated, galvanized carbon-steel sheet with each leg 2 inches square.
  - 2. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation.
- C. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.
  - 1. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:
    - a. Ceiling plenums.
- D. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 1 inch between face of insulation and substrate to which anchor is attached.
- E. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates without damaging insulation, fasteners, or substrates.

## 2.7 ACCESSORIES

- A. Insulation for Miscellaneous Voids:
  - 1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

### 3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Install insulation with manufacturer's R-value label exposed after insulation is installed.

- D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

### **3.3 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION**

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
  - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
  - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
  - 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
  - 4. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.
  - 5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation.
    - a. Exterior Walls: Set units with facing placed toward as indicated on Drawings.
    - b. Interior Walls: Set units with facing placed toward areas of high humidity
- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
  - 1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft..

### **3.4 INSTALLATION OF CURTAIN-WALL INSULATION**

- A. Install board insulation in curtain-wall construction according to curtain-wall manufacturer's written instructions.
  - 1. Hold insulation in place by securing metal clips and straps or integral pockets within window frames, spaced at intervals recommended in writing by insulation manufacturer to hold insulation securely in place without touching spandrel glass.
  - 2. Maintain cavity width of dimension indicated on Drawings between insulation and glass.
  - 3. Install insulation to fit snugly without bowing.

### **3.5 PROTECTION**

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.
- B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

**END OF SECTION 072100**

**SECTION 072419**

**WATER-DRAINAGE EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. EIFS-clad drainage-wall assemblies that are field applied over substrate.
  - 2. Water-resistive barrier coatings.
- B. Related Requirements:
  - 1. Section 072500 "Weather Barriers" for water-resistant building paper or building wrap and flexible flashings installed over sheathing behind mechanically fastened EIFS.
  - 2. Section 072600 "Vapor Retarders" for wall sheet vapor retarders.
  - 3. Section 072726 "Fluid-Applied Membrane Air Barriers" for fluid-applied, synthetic polymer air barriers applied over sheathing behind EIFS-clad wall assemblies.

**1.3 DEFINITIONS**

- A. Definitions in ASTM E2110 apply to Work of this Section.
- B. EIFS: Exterior insulation and finish system(s).
- C. IBC: International Building Code.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each EIFS component, trim, and accessory, including water-resistive barrier coatings.
- B. Shop Drawings:
  - 1. Include details for EIFS buildouts.
  - 2. Include details for parapet cap flashing.
- C. Samples for Verification: 24-inch-square panels for each type of finish-coat color and texture indicated, prepared using same tools and techniques intended for actual work.
  - 1. Include a typical control joint filled with sealant of color selected, as specified in Section 079200 "Joint Sealants."

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.



- B. Manufacturer Certificates: Signed by EIFS manufacturer, certifying the following:
  - 1. EIFS complies with requirements.
  - 2. Substrates to which EIFS is indicated to be attached are acceptable to EIFS manufacturer.
  - 3. Accessory products installed with EIFS, including joint sealants, flashing, water-resistive barrier coatings, whether or not furnished by EIFS manufacturer and whether or not specified in this Section, are acceptable to EIFS manufacturer.
- C. Field quality-control reports.
- D. Sample Warranty: For manufacturer's special warranty.

#### **1.6 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For EIFS to include in maintenance manuals.

#### **1.7 QUALITY ASSURANCE**

- A. Installer Qualifications: An installer who is certified in writing by AWCI International as qualified to install Class PB EIFS using trained workers.

#### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in original, unopened packages with manufacturers' labels intact and clearly identifying products.
- B. Store materials inside and under cover; keep them dry and protected from weather, direct sunlight, surface contamination, aging, corrosion, damaging temperatures, construction traffic, and other causes.
  - 1. Stack insulation board flat and off the ground.
  - 2. Protect plastic insulation against ignition at all times. Do not deliver plastic insulating materials to Project site before installation time.
  - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

#### **1.9 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions and ambient outdoor air, humidity, and substrate temperatures permit EIFS to be applied, dried, and cured according to manufacturers' written instructions and warranty requirements.
  - 1. Proceed with installation of adhesives or coatings only when ambient temperatures have remained, or are forecast to remain, above 40 deg F (4.4 deg C) for a minimum of 24 hours before, during, and after application. Do not apply EIFS adhesives or coatings during rainfall.

#### **1.10 WARRANTY**

- A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace components of EIFS-clad drainage-wall assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
  - a. Bond integrity and weathertightness.
  - b. Deterioration of EIFS finishes and other EIFS materials beyond normal weathering.
2. Warranty coverage includes the following components of EIFS-clad drainage-wall assemblies:
  - a. EIFS finish, including base coats, finish coats, and reinforcing mesh.
  - b. Insulation installed as part of EIF, including foam buildouts.
  - c. Insulation adhesive and mechanical fasteners.
  - d. EIFS accessories, including trim components and flashing.
  - e. Water-resistive barrier coatings.
  - f. EIFS drainage components.
3. Warranty Period: Ten (10) years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Dryvit Systems, Inc.
  2. Parex USA, Inc.
  3. Senergy; Master Builders Solutions.
  4. Senergy/Finestone Pebbletex CI-DCA.
  5. StoTherm: CI-Essence.
- B. Source Limitations: Obtain EIFS from single source from single EIFS manufacturer and from sources approved by EIFS manufacturer as compatible with EIFS components.

### **2.2 PERFORMANCE REQUIREMENTS**

- A. EIFS Performance: Comply with ASTM E2568 and with the following:
  1. Weathertightness: Resistant to uncontrolled water penetration from exterior, with a means to drain water entering EIFS to the exterior.
  2. Structural Performance of Assembly and Components:
    - a. Wind Loads: Uniform pressure as indicated on Drawings.
  3. Impact Performance: ASTM E2568, Standard] impact resistance unless otherwise indicated.
  4. Abrasion Resistance of Finish Coat: Sample consisting of 1-inch-thick EIFS mounted on 1/2-inch-thick gypsum board; cured for a minimum of 28 days and shows no cracking,

checking, or loss of film integrity after exposure to 528 quarts of sand when tested according to ASTM D968, Method A.

5. Mildew Resistance of Finish Coat: Sample applied to 2-by-2-inch clean glass substrate; cured for 28 days and shows no growth when tested according to ASTM D3273 and evaluated according to ASTM D3274.
6. Drainage Efficiency: 90 percent average minimum when tested according to ASTM E2273.

## 2.3 EIFS MATERIALS

- A. Water-Resistive Barrier Coating: EIFS manufacturer's standard formulation and accessories for use as water-resistive barrier coating; compatible with substrate.
  1. Water-Resistance: Comply with physical and performance criteria of ASTM E2570/E2570M.
- B. Flexible-Membrane Flashing: Cold-applied, self-adhering, self-healing, rubberized-asphalt, and polyethylene-film composite sheet or tape and primer; EIFS manufacturer's standard or product recommended in writing by EIFS manufacturer.
- C. Insulation Adhesive: EIFS manufacturer's standard formulation designed for indicated use; specifically formulated to be applied to back side of insulation in a manner that creates open vertical channels designed to serve as an integral part of the water-drainage system of the EIFS-clad drainage-wall assembly; compatible with substrate; and complying with one of the following:
  1. Factory-blended dry formulation of portland cement, dry polymer admixture, and fillers specified for base coat.
  2. Factory-mixed noncementitious formulation designed for adhesive attachment of insulation to substrates of type indicated, as recommended by EIFS manufacturer.
- D. Molded, (Expanded) Rigid Cellular Polystyrene Board Insulation: Comply with ASTM E2430/E2430M, unless otherwise noted, and the following:
  1. Flame-Spread and Smoke-Developed Indexes: 25 and 450 or less, respectively, according to ASTM E84.
  2. Dimensions: Provide insulation boards of not more than 24 by 48 inches, with thickness indicated on Drawings.
- E. Reinforcing Mesh: Balanced, alkali-resistant, open-weave, glass-fiber mesh treated for compatibility with other EIFS materials, made from continuous multiend strands with retained mesh tensile strength of not less than 120 lbf/in. according to ASTM E2098/E2098M and the following:
  1. Reinforcing Mesh for EIFS, General: Not less than weight required to comply with impact-performance level specified in "Performance Requirements" Article.
- F. Base Coat: EIFS manufacturer's standard mixture complying with one of the following:
  1. Job-combined formulation of manufacturer's standard polymer-emulsion adhesive and manufacturer's standard dry mix containing portland cement.
  2. Factory-mixed noncementitious formulation of polymer-emulsion adhesive and inert fillers that is ready to use without adding other materials.

- G. Water-Resistant Base Coat: EIFS manufacturer's standard water-resistant formulation complying with one of the following:
1. Job-mixed formulation of portland cement complying with ASTM C150/C150M, Type I, white or natural color; and manufacturer's standard polymer-emulsion adhesive designed for use with portland cement.
  2. Job-combined formulation of manufacturer's standard polymer-emulsion adhesive and manufacturer's standard dry mix containing portland cement.
- H. Mechanical Fasteners: EIFS manufacturer's standard corrosion-resistant fasteners, consisting of thermal cap, standard washer and shaft attachments, and fastener indicated below; designed to resist Project's design loads; capable of pulling fastener head below surface of insulation board; and complying with the following:
1. For attachment to light-gage steel framing members not less than 0.0179 inch in thickness, provide steel drill screws complying with ASTM C1002.
  2. For attachment to masonry and concrete substrates, provide sheathing dowel in form of a plastic wing-tipped fastener with thermal cap, sized to fit insulation thickness indicated and to penetrate substrate to depth required to secure anchorage.
- I. Primer: EIFS manufacturer's standard factory-mixed, elastomeric-polymer primer for preparing base-coat surface for application of finish coat.
- J. Finish Coat: EIFS manufacturer's acrylic-based coating with enhanced mildew resistance complying with the following
1. Factory-mixed formulation of polymer-emulsion binder, colorfast mineral pigments, sound stone particles, and fillers.
  2. Colors: As selected by Architect from manufacturer's full range.
  3. Textures: As selected by Architect from manufacturer's full range.
- K. Sealer: Manufacturer's waterproof, clear acrylic-based sealer for protecting finish coat.
- L. Water: Potable.
- M. Trim Accessories: Type as designated or required to suit conditions indicated and to comply with EIFS manufacturer's written instructions; manufactured from UV-stabilized PVC; and complying with ASTM D1784, manufacturer's standard cell class for use intended, and ASTM C1063.
1. Casing Bead: Prefabricated, one-piece type for attachment behind insulation, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg.
  2. Drip Screed/Track: Prefabricated, one-piece type for attachment behind insulation with face leg extended to form a drip, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg.
  3. Weep Screed/Track: Prefabricated, one-piece type for attachment behind insulation with perforated face leg and weep holes in track bottom, of depth required to suit thickness of coating and insulation, with face leg perforated for bonding to coating and back leg; designed to drain incidental moisture that gets into wall construction to the exterior at terminations of EIFS with drainage.

4. Expansion Joint: Closed-cell polyethylene backer rod and elastomeric sealant 3/4-inch-minimum.
5. Windowsill Flashing: Prefabricated type for both flashing and sloping sill over framing beneath windows; with end and back dams; designed to direct water to exterior.
6. Parapet Cap Flashing: Type for both flashing and covering parapet top, with design complying with ASTM C1397.

## **2.4 MIXING**

- A. Comply with EIFS manufacturer's requirements for combining and mixing materials. Do not introduce admixtures, water, or other materials, except as recommended by EIFS manufacturer. Mix materials in clean containers. Use materials within time period specified by EIFS manufacturer or discard.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roof edges, wall framing, flashings, openings, substrates, and junctures at other construction for suitable conditions where EIFS will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
  1. Begin coating application only after surfaces are dry.
  2. Application of coating indicates acceptance of surfaces and conditions.

### **3.2 PREPARATION**

- A. Protect contiguous work from moisture deterioration and soiling caused by application of EIFS. Provide temporary covering and other protection needed to prevent spattering of exterior finish coats on other work.
- B. Protect EIFS, substrates, and wall construction behind them from inclement weather during installation. Prevent penetration of moisture behind drainage plane of EIFS and deterioration of substrates.
- C. Prepare and clean substrates to comply with EIFS manufacturer's written instructions to obtain optimum bond between substrate and adhesive for insulation.
  1. Concrete Substrates: Provide clean, dry, neutral-pH substrate for insulation installation. Verify suitability of substrate by performing bond and moisture tests recommended by EIFS manufacturer.

### **3.3 EIFS INSTALLATION, GENERAL**

- A. Comply with ASTM C1397, ASTM E2511, and EIFS manufacturer's written instructions for installation of EIFS as applicable to each type of substrate indicated.

### **3.4 SUBSTRATE PROTECTION APPLICATION**

- A. Water-Resistive Barrier Coating: Apply over sheathing to provide a water-resistive barrier.

1. Tape and seal joints, exposed edges, terminations, and inside and outside corners of sheathing unless otherwise indicated by EIFS manufacturer's written instructions.
- B. Flexible-Membrane Flashing: Install over water-resistive barrier coating, applied and lapped to shed water; seal at openings, penetrations, and terminations. Prime substrates with flashing primer if required and install flashing.

### **3.5 TRIM INSTALLATION**

- A. Trim: Apply trim accessories at perimeter of EIFS, at expansion joints and elsewhere as indicated. Coordinate with installation of insulation.
1. Weep Screed/Track: Use at bottom termination edges, at window and door heads, and at floor line expansion joints of water-drainage EIFS unless otherwise indicated.
  2. Windowsill Flashing: Use at windows unless otherwise indicated.
  3. Expansion Joint: Use where indicated on Drawings.
  4. Casing Bead: Use at other locations.
  5. Parapet Cap Flashing: Use where indicated on Drawings.

### **3.6 DRAINAGE MAT INSTALLATION**

- A. Drainage Mat: Apply wrinkle free, continuously, with edges butted overlapped and mechanically secured with fasteners over water-resistive barrier coating.

### **3.7 INSULATION INSTALLATION**

- A. Board Insulation: Adhesively attach insulation to substrate in compliance with ASTM C1397 and the following:
1. Apply adhesive to insulation by notched-trowel method, with notches oriented vertically to produce drainage channels that remain functional after the insulation is adhered to substrate.
  2. Apply adhesive to insulation by notched-trowel method in a manner that results in coating the entire surface of drainage mat with adhesive once insulation is adhered to drainage mat.
  3. Apply adhesive to ridges on back of channeled insulation by notched-trowel method in a manner that results in full adhesive contact over the entire surface of ridges, leaving channels free of adhesive once insulation is adhered to substrate.
  4. Press and slide insulation into place. Apply pressure over entire surface of insulation to accomplish uniform contact, high initial grab, and overall level surface.
  5. Allow adhered insulation to remain undisturbed for not less than 24 hours, before installing mechanical fasteners, beginning rasping and sanding insulation or applying base coat and reinforcing mesh.
  6. Mechanically attach insulation to substrate. Install top surface of fastener heads flush with plane of insulation. Install fasteners into or through substrates with the following minimum penetration:
    - a. Steel Framing: 5/16 inch.

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7. Apply insulation over substrates in courses with long edges of boards oriented horizontally.
8. Begin first course of insulation from a level base line and work upward.
9. Begin first course of insulation from screed/track and work upward. Work from perimeter casing beads toward interior of panels if possible.
10. Stagger vertical joints of insulation boards in successive courses to produce running bond pattern. Locate joints, so no piece of insulation is less than 12 inches wide or 6 inches high. Offset joints not less than 6 inches from corners of window and door openings.
  - a. Adhesive Attachment: Offset joints of insulation not less than 6 inches from horizontal and 4 inches from vertical joints in sheathing.
  - b. Mechanical Attachment: Offset joints of insulation from horizontal joints in sheathing.
11. Interlock ends at internal and external corners.
12. Abut insulation tightly at joints within and between each course to produce flush, continuously even surfaces without gaps or raised edges between boards. If gaps greater than 1/16 inch occur, fill with insulation cut to fit gaps exactly; insert insulation without using adhesive or other material.
13. Cut insulation to fit openings, corners, and projections precisely and to produce edges and shapes complying with details indicated.
14. Rasp or sand flush entire surface of insulation to remove irregularities projecting more than 1/16 inch from surface of insulation and to remove yellowed areas due to sun exposure; do not create depressions deeper than 1/16 inch. Prevent airborne dispersal and immediately collect insulation raspings or sandings.
15. Cut aesthetic reveals in outside face of insulation with high-speed router and bit configured to produce grooves, rabbets, and other features that comply with profiles and locations indicated. Do not reduce insulation thickness at aesthetic reveals to less than 3/4 inch.
16. Install foam buildouts and attach to structural substrate by adhesive and mechanical fastening.
17. Interrupt insulation for expansion joints where indicated.
18. Form joints for sealant application by leaving gaps between adjoining insulation edges and between insulation edges and dissimilar adjoining surfaces. Make gaps wide enough to produce joint widths indicated after encapsulating joint substrates with base coat and reinforcing mesh.
19. Before installing insulation and before applying field-applied reinforcing mesh, fully wrap board edges. Cover edges of board and extend encapsulating mesh not less than 2-1/2 inches over front and back face unless otherwise indicated on Drawings.
20. Treat exposed edges of insulation as follows:
  - a. Except for edges forming substrates of sealant joints, encapsulate with base coat, reinforcing mesh, and finish coat.

- b. Encapsulate edges forming substrates of sealant joints within EIFS or between EIFS and other work with base coat and reinforcing mesh.
21. Coordinate installation of flashing and insulation to produce wall assembly that does not allow water to penetrate behind flashing and water-resistive barrier coating.
- B. Expansion Joints: Install at locations indicated, where required by EIFS manufacturer, and as follows:
- 1. At expansion joints in substrates behind EIFS.
  - 2. Where EIFS adjoin dissimilar substrates, materials, and construction, including other EIFS.
  - 3. Where wall height or building shape changes.
  - 4. Where EIFS manufacturer requires joints in long continuous elevations.

### **3.8 BASE-COAT APPLICATION**

- A. Water-Resistant Base Coat: Apply full-thickness coverage to exposed insulation and to exposed surfaces of foam build-outs and to other surfaces indicated on Drawings.
- B. Base Coat: Apply full coverage to exposed insulation and foam build-outs with not less than 1/16-inch-dry-coat thickness.
- C. Reinforcing Mesh: Embed reinforcing mesh in wet base coat to produce wrinkle-free installation with mesh continuous at corners, overlapped not less than 2-1/2 inches or otherwise treated at joints to comply with ASTM C1397. Do not lap reinforcing mesh within 8 inches of corners. Completely embed mesh, applying additional base-coat material if necessary, so reinforcing-mesh color and pattern are invisible.
- D. Additional Reinforcing Mesh: Apply strip-reinforcing mesh around openings, extending 4 inches beyond perimeter. Apply additional 9-by-12-inch strip-reinforcing mesh diagonally at corners of openings (re-entrant corners). Apply 8-inch-wide, strip-reinforcing mesh at both inside and outside corners unless base layer of mesh is lapped not less than 4 inches on each side of corners.
  - 1. Embed strip-reinforcing mesh in base coat before applying first layer of reinforcing mesh.
- E. Foam Buildouts: Fully embed reinforcing mesh in base coat.
- F. Double Base-Coat Application: Where indicated, apply second base coat in same manner and thickness as first application, except without reinforcing mesh. Do not apply until first base coat has cured.

### **3.9 FINISH-COAT APPLICATION**

- A. Primer: Apply over dry base coat.
- B. Finish Coat: Apply full-thickness coverage over dry primed base coat, maintaining a wet edge at all times for uniform appearance, to produce a uniform finish of color and texture matching approved sample and free of cold joints, shadow lines, and texture variations.
- C. Sealer Coat: Apply over dry finish coat, in number of coats and thickness required by EIFS manufacturer.



**3.10 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Water-resistive barrier coatings applied over sheathing.
- B. EIFS will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

**3.11 CLEANING AND PROTECTION**

- A. Remove temporary covering and protection of other work. Promptly remove coating materials from window and door frames and other surfaces outside areas indicated to receive EIFS coatings.

**END OF SECTION 072419**

## SECTION 072500

### WEATHER BARRIERS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Building paper.
  - 2. Flexible flashing.
  - 3. Drainage material.

##### 1.3 ACTION SUBMITTALS

- A. Shop Drawings: Show details of building paper at terminations, openings, and penetrations. Show details of flexible flashing applications.

#### PART 2 - PRODUCTS

##### 2.1 WATER-RESISTIVE BARRIER

- A. Building Paper: ASTM D226, Type 1 (No. 15 asphalt-saturated organic felt), unperforated.
  - 1. Air Permeance: Not more than 0.004 cfm/sq. ft. at 0.3-inch wg when tested according to ASTM E2178.
  - 2. Allowable UV Exposure Time: Not less than three months.
  - 3. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

##### 2.2 FLEXIBLE FLASHING

- A. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spun bonded polyolefin to produce an overall thickness of not less than 0.025 inch.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. DuPont de Nemours, Inc.
- B. Primer for Flexible Flashing: Product recommended in writing by flexible flashing manufacturer for substrate.
- C. Nails and Staples: Product recommended in writing by flexible flashing manufacturer and complying with ASTM F1667.

##### 2.3 DRAINAGE MATERIAL

- A. Drainage Material: Product shall maintain a continuous open space between water-resistive barrier and exterior cladding to create a drainage plane and shall be used under adhered masonry veneer.

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1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. DuPont de Nemours, Inc.
  - b. Insulfoam; Carlisle Construction Materials Company.
  - c. Keene Building Products.
  - d. CavClear Rainscreen Mat WS.
2. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

**PART 3 - EXECUTION**

**3.1 WATER-RESISTIVE BARRIER INSTALLATION**

- A. Building Paper: Apply horizontally with a 2-inch overlap and a 6-inch end lap; fasten to sheathing with galvanized staples or roofing nails.
  1. Seal seams, edges, fasteners, and penetrations with tape.
  2. Extend into jambs of openings and seal corners with tape.

**3.2 FLEXIBLE FLASHING INSTALLATION**

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
  1. Prime substrates as recommended by flashing manufacturer.
  2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
  3. Lap flashing over water-resistive barrier at bottom and sides of openings.
  4. Lap water-resistive barrier over flashing at heads of openings.
  5. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

**3.3 DRAINAGE MATERIAL INSTALLATION**

- A. Install drainage material over building wrap and flashing to comply with manufacturer's written instructions.

**END OF SECTION 072500**

**SECTION 072600**

**VAPOR RETARDERS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Polyethylene vapor retarders.
- B. Related Requirements:
  - 1. Section 033000 "Cast-in-Place Concrete" for under-slab vapor retarders.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Product Test Reports: For each product, for tests performed by a qualified testing agency.

**PART 2 - PRODUCTS**

**2.1 POLYETHYLENE VAPOR RETARDERS**

- A. Polyethylene Vapor Retarders: ASTM D4397, 15-mil-thick sheet, with maximum permeance rating of 0.1 perm.

**2.2 ACCESSORIES**

- A. Vapor-Retarder Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.
- B. Adhesive for Vapor Retarders: Product recommended by vapor-retarder manufacturer and has demonstrated capability to bond vapor retarders securely to substrates indicated.
- C. Vapor-Retarder Fasteners: Pancake-head, self-tapping steel drill screws; with fender washers.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Clean substrates of substances that are harmful to vapor retarders, including removing projections capable of puncturing vapor retarders.

**3.2 INSTALLATION OF VAPOR RETARDERS ON FRAMING**

- A. Place vapor retarders on side of construction indicated on Drawings.

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- B. Extend vapor retarders to extremities of areas to protect from vapor transmission. Secure vapor retarders in place with adhesives, vapor retarder fasteners, or other anchorage system as recommended by manufacturer. Extend vapor retarders to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
- C. Seal vertical joints in vapor retarders over framing by lapping no fewer than two studs and sealing with vapor-retarder tape according to vapor-retarder manufacturer's written instructions. Locate all joints over framing members or other solid substrates.
- D. Seal joints caused by pipes, conduits, electrical boxes, and similar items penetrating vapor retarders with vapor-retarder tape to create an airtight seal between penetrating objects and vapor retarders.
- E. Repair tears or punctures in vapor retarders immediately before concealment by other work. Cover with vapor-retarder tape or another layer of vapor retarders.

**3.3 PROTECTION**

- A. Protect vapor retarders from damage until concealed by permanent construction.

**END OF SECTION 072600**

## SECTION 072726

### FLUID-APPLIED MEMBRANE AIR BARRIERS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Vapor-permeable, fluid-applied air barriers.
- B. Related Requirements:
  - 1. Section 061600 "Sheathing" for wall sheathings and wall sheathing joint-and-penetration treatments.
  - 2. Section 072500 "Weather Barriers" for weather barriers, including building paper.

##### 1.3 DEFINITIONS

- A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air-Barrier Assembly: The collection of air-barrier materials and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

##### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; dry film thickness; and tested physical and performance properties of products.
- B. Shop Drawings: For air-barrier assemblies.
  - 1. Show locations and extent of air-barrier materials, accessories, and assemblies specific to Project conditions.
  - 2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
  - 3. Include details of interfaces with other materials that form part of air barrier.

##### 1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.
- B. Product Test Reports: For each air-barrier assembly, for tests performed by a qualified testing agency.

- C. Field quality-control reports.

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- B. Protect stored materials from direct sunlight.

## 1.8 FIELD CONDITIONS

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

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.

### 2.2 PERFORMANCE REQUIREMENTS

- A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: Maximum 0.0002 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft, when tested according to ASTM E2357.

### 2.3 HIGH-BUILD AIR BARRIERS, VAPOR PERMEABLE

- A. High-Build, Vapor-Permeable Air Barrier: Modified bituminous or synthetic polymer membrane with an installed dry film thickness, according to manufacturer's written instructions, of 35 mils or thicker over smooth, void-free substrates.
  - 1. Modified Bituminous Type:
    - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - 1) DuPont de Nemours, Inc. -
      - 2) PROSOCO, Inc.. – R-Guard TMVP
      - 3) W.R. Meadows, Inc. – Airshield LM
      - 4) Henry Company – Henry Air-Bloc 17MR
  - 2. Synthetic Polymer Type:

- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- 1) DuPont de Nemours, Inc. - Tyvek Fluid Applied
- 2) PROSOCO, Inc.
- 3) W.R. Meadows, Inc. – Airshield LSR

3. Physical and Performance Properties:

- a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E2178.
- b. Vapor Permeance: Minimum 10 perms ASTM E96/E96M, Desiccant Method, Procedure A.
- c. Ultimate Elongation: Minimum 200percent; ASTM D412, Die C.
- d. Adhesion to Substrate: Minimum 30 lbf/sq. in. when tested according to ASTM D4541.
- e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

## 2.4 LOW-BUILD AIR BARRIERS, VAPOR PERMEABLE

- A. Low-Build, Vapor-Permeable Air Barrier: Synthetic polymer material with an installed dry film thickness, according to manufacturer's written instructions, of 6 to 15 mils over smooth, void-free substrates.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:

- a. DuPont de Nemours, Inc. – Tyvek Fluid Applied WB+.
- b. PROSOCO, Inc.
- c. W.R. Meadows, Inc. – Airshield TMP

2. Physical and Performance Properties:

- a. Air Permeance: Maximum 0.0002 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E2178.
- b. Vapor Permeance: Minimum 10 perms ASTM E96/E96M, Desiccant Method, Procedure A.
- c. Ultimate Elongation: Minimum 320percent; ASTM D412, Die C.
- d. Adhesion to Substrate: Minimum >33 psi when tested according to ASTM D7234.
- e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

## 2.5 ACCESSORY MATERIALS

- A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.
- B. Primer: Liquid waterborne or solvent-borne primer recommended for substrate by air-barrier material manufacturer.



- C. Preformed Silicone Extrusion: Manufacturer's standard system consisting of cured low-modulus silicone extrusion, sized to fit opening widths, with a single-component, neutral-curing, Class 100/50 (low-modulus) silicone sealant for bonding extrusions to substrates
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. DuPont de Nemours, Inc.
    - b. Pecora Corporation.
    - c. The Dow Chemical Company.
    - d. Tremco Incorporated.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
  - 1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
  - 2. Verify that substrates have cured and aged for minimum time recommended in writing by air-barrier manufacturer.
  - 3. Verify that substrates are visibly dry and free of moisture.
  - 4. Verify that masonry joints are flush and completely filled with mortar.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 SURFACE PREPARATION**

- A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids in concrete with substrate-patching material.
- E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.
- H. Bridge expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

### 3.3 ACCESSORIES INSTALLATION

- A. Install accessory materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.
  - 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
  - 2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.
  - 3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
  - 4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
- B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- C. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.
- D. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- E. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.
  - 1. Transition Strip: Roll firmly to enhance adhesion.
  - 2. Preformed Silicone Extrusion: Set in full bed of silicone sealant applied to walls, frame, and air-barrier material.
- F. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant.
- G. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.
- H. Seal top of through-wall flashings to air barrier with an additional 6-inch-wide, transition strip.
- I. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- J. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.

### 3.4 PRIMARY AIR-BARRIER MATERIAL INSTALLATION

- A. Apply air-barrier material to form a seal with strips and transition strips and to achieve a continuous air barrier according to air-barrier manufacturer's written instructions and details. Apply air-barrier material within manufacturer's recommended application temperature ranges.

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1. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
  2. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
  3. Where multiple prime coats are needed to achieve required bond, allow adequate drying time between coats.
- B. High-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply air-barrier material in full contact around protrusions such as masonry ties.
1. Vapor-Permeable, High-Build Air Barrier: Total dry film thickness as recommended in writing by manufacturer to comply with performance requirements, but not less than 35 mils applied in one or more equal coats.
- C. Low-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply an increased thickness of air-barrier material in full contact around protrusions such as masonry ties.
1. Vapor-Permeable, Low-Build Air Barrier: Total dry film thickness 22 perms at 25 mils thick, applied in one or more equal coats. Apply additional material as needed to achieve void- and pinhole-free surface, but do not exceed thickness on which required vapor permeability is based.
- D. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air-barrier components.

### **3.5 FIELD QUALITY CONTROL**

- A. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
  2. Air-barrier dry film thickness.
  3. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
  4. Site conditions for application temperature and dryness of substrates have been maintained.
  5. Surfaces have been primed, if applicable.
  6. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
  7. Termination mastic has been applied on cut edges.
  8. Strips and transition strips have been firmly adhered to substrate.
  9. Compatible materials have been used.
  10. Transitions at changes in direction and structural support at gaps have been provided.
  11. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
  12. All penetrations have been sealed.

### **3.6 CLEANING AND PROTECTION**

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
1. Protect air barrier from exposure to UV light and harmful weather exposure as recommended in writing by manufacturer. If exposed to these conditions for longer than

recommended, remove and replace air barrier or install additional, full-thickness, air-barrier application after repairing and preparing the overexposed materials according to air-barrier manufacturer's written instructions.

2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended in writing by manufacturer of affected construction.
- C. Remove masking materials after installation.

**END OF SECTION 072726**

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**SECTION 074113.16**

**STANDING-SEAM METAL ROOF PANELS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Standing-seam metal roof panels. The panels will be located at the Main Building Mansard roof. Refer to Drawings for locations.
- B. Related Sections:

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
  - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
  - 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
- C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
  - 1. Metal Panels: 12 inches long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

**1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For metal panels to include in maintenance manuals.

**1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.

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- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

**1.8 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

**1.9 COORDINATION**

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

**1.10 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking, or puncturing.
    - b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 35 years from date of Substantial Completion.
- C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
  - 1. Warranty Period: 20 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Solar Reflectance Index: Not less than 29 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- B. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for steep-slope roof products.
- C. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:

1. Wind Loads: As indicated on Drawings.
  2. Other Design Loads: As indicated on Drawings.
- D. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E1680 or ASTM E283 at the following test-pressure difference:
1. Test-Pressure Difference: 1.57 lbf/sq. ft.
- E. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:
1. Test-Pressure Difference: 2.86 lbf/sq. ft.
- F. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
1. Uplift Rating: UL 90.
- G. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces. .

## 2.2 STANDING-SEAM METAL ROOF PANELS

- A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.
  2. Aluminum Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1637.
- B. LokSeam, Seamed-Joint, Standing-Seam Metal Roof Panels Formed with vertical ribs at panel edges and a flat pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and hand seaming panels together.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. MBCI.
    - b. Metal Sales Manufacturing Corporation.
  2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
    - a. Nominal Thickness: (24 ga.).
    - b. Exterior Finish: Three-coat fluoropolymer
    - c. Color: As selected by Architect from manufacturer's full range
  3. Aluminum Sheet: Coil-coated sheet, ASTM B209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.



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- a. Thickness: (24 ga.).
  - b. Surface: Smooth, flat finish.
  - c. Exterior Finish: Three-coat fluoropolymer
  - d. Color: As selected by Architect from manufacturer's full range.
4. Clips: One-piece fixed to accommodate thermal movement.
- a. Material: 0.028-inch-nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
  - b. Material: 0.0250-inch-thick, stainless steel sheet.
5. Joint Type: As standard with manufacturer.
6. Panel Coverage: 16 inches.
7. Panel Height: 1.75 inches,

### 2.3 UNDERLAYMENT MATERIALS

- A. Felt Underlayment: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felts.

### 2.4 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
  2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
  3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
  2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
  3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

## **2.5 FABRICATION**

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
  - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
  - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
  - 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
  - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.

## **2.6 FINISHES**

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
  - 1. Three-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.

1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
  - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

### **3.3 INSTALLATION OF UNDERLAYMENT**

- A. Felt Underlayment: Apply at locations indicated below in shingle fashion to shed water, and with lapped joints of not less than 2 inches.
  1. Apply over the entire roof surface.
- B.
- C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

### **3.4 INSTALLATION OF STANDING SEAM METAL ROOF PANELS**

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  1. Shim or otherwise plumb substrates receiving metal panels.
  2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
  3. Install screw fasteners in predrilled holes.
  4. Locate and space fastenings in uniform vertical and horizontal alignment.
  5. Install flashing and trim as metal panel work proceeds.
  6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
  7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
  8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
  1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
- C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

- E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
1. Install clips to supports with self-tapping fasteners.
  2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
  3. Seamed Joint: Crimp standing seams with manufacturer-approved, hand seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
  4. Watertight Installation:
    - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
    - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
    - c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.
- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.
- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
  2. 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 expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

### **3.5 ERECTION TOLERANCES**

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

### **3.6 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.

- D. Prepare test and inspection reports.

**3.7 CLEANING AND PROTECTION**

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION 074113.16**

**SECTION 074293**

**SOFFIT PANELS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:

- 1. Metal R-Panels.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

- B. Shop Drawings:

- 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
- 2. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.

- C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

- 1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, tests performed by a qualified testing agency.
- C. Sample Warranties: For special warranties.

**1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For metal panels to include in maintenance manuals.

**1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

### **1.8 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

### **1.9 COORDINATION**

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

### **1.10 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking, or puncturing.
    - b. Deterioration of metals and other materials beyond normal weathering.
  - 2. Warranty Period: Two (2) years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
  - 1. Wind Loads: As indicated on Drawings.
  - 2. Deflection Limits: For wind loads, no greater than 1/180 of the span.
- B. Air Infiltration: Air leakage of not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:
  - 1. Test-Pressure Difference: 6.24 lbf/sq. ft..

- C. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E331 at the following test-pressure difference:
  - 1. Test-Pressure Difference: 6.24 lbf/sq. ft..
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

## 2.2 METAL PANELS FOR SOFFIT

- A. Provide metal panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
- B. R-Panels Metal Panels: Match profile and material of metal roof
  - 1. Finish: Match finish and color of metal roof panels as selected by Architect..
  - 2. Sealant: Factory applied within interlocking joint.
- C. R-Panel Metal Panels Solid panels formed with vertical panel edges and intermediate stiffening ribs symmetrically spaced between panel edges..
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. MBCI – PBR.
    - b. ATAS International, Inc. – Belvedere Grand R
    - c. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company – R-36
    - d.
  - 2. Aluminum Sheet: Coil-coated sheet, ASTM B209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
    - a. Thickness: 0.032 inch, 26 ga..
    - b. Surface: Smooth, flat finish.
    - c. Exterior Finish: Three-coat fluoropolymer.
    - d. Color: As selected by Architect from manufacturer's full range
  - 3. Panel Coverage: 36 inches
  - 4. Panel Height: 1.25 inches.

## 2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
  - 1. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal panels.



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- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
  - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
  - 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
  - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

## 2.4 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
  - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
  - 3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
  - 4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  - 5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
    - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal soffit panel manufacturer for application but not less than thickness of metal being secured.

## 2.5 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if

they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Aluminum Panels and Accessories:

1. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
  1. Examine framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal panel manufacturer.
  2. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal panel manufacturer.
    - a. Verify that air- or water-resistive barriers been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.
  1. Soffit Framing: Wire tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.

#### **3.3 INSTALLATION**

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  1. Shim or otherwise plumb substrates receiving metal panels.
  2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
  3. Install screw fasteners in predrilled holes.
  4. Locate and space fastenings in uniform vertical and horizontal alignment.
  5. Install flashing and trim as metal panel work proceeds.
  6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
  7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:

1. Aluminum Panels: Use aluminum or stainless steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
  1. Apply panels and associated items true to line for neat and weathertight enclosure.
  2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
  3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
  4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
- E. Watertight Installation:
  1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommend by manufacturer on side laps of nesting-type panels and elsewhere as needed to make panels watertight.
  2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
  3. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.
- F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
  1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.
- G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.
  1. Install exposed flashing and trim that is without buckling, and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.
  2. 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 expansion provisions cannot be used or would not be waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

### **3.4 CLEANING AND PROTECTION**

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

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Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION 074293**

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**SECTION 075423**

**THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
1. Heat welded adhered thermoplastic polyolefin (TPO) roofing system.
  2. Vapor retarder.
  3. Roof insulation.
  4. Cover board.
  5. Walkways.
- B. Section includes installation of sound-absorbing insulation strips in ribs of roof deck. Sound-absorbing insulation strips are furnished under Section 053100 "Steel Decking."
- C. Related Requirements:
1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
  2. Section 072100 "Thermal Insulation" for insulation beneath the roof deck.
  3. Section 076200 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
  4. Section 077100 "Roof Specialties" for manufactured copings and roof edge flashings.
  - 5.
  6. Section 079200 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.

**1.3 DEFINITIONS**

- A. Roofing Terminology: Definitions in ASTM D1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to Work of this Section.

**1.4 PREINSTALLATION MEETINGS**

- A. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
1. Meet with Owner, Architect, Construction Manager, roofing Installer, , and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
  5. Review structural loading limitations of roof deck during and after roofing.
  6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
  7. Review governing regulations and requirements for insurance and certificates if applicable.
  8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.
- B. Preinstallation Roofing Conference: Conduct conference at Project site.
1. Meet with Owner, Architect, Construction Manager,, roofing Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
  2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
  3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
  5. Review structural loading limitations of roof deck during and after roofing.
  6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
  7. Review governing regulations and requirements for insurance and certificates if applicable.
  8. Review temporary protection requirements for roofing system during and after installation.
  9. Review roof observation and repair procedures after roofing installation.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:
1. Layout and thickness of insulation.
  2. Base flashings and membrane termination details.
  3. Flashing details at penetrations.
  4. Tapered insulation layout, thickness, and slopes.
  5. Roof plan showing orientation of steel roof deck and orientation of roof membrane, fastening spacings, and patterns for mechanically fastened roofing system.
  6. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
  7. Tie-in with adjoining air barrier.
- C. Samples for Verification: For the following products:
1. Roof membrane and flashings, of color required.
- D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

#### **1.6 INFORMATIONAL SUBMITTALS**

- A. Manufacturer Certificates:
1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
    - a. Submit evidence of compliance with performance requirements.
  2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- B. Product Test Reports: For roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.

- C. Evaluation Reports: For components of roofing system, from ICC-ES.
- D. Sample Warranties: For manufacturer's special warranties.

#### **1.7 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For roofing system to include in maintenance manuals.
- B. Certified statement from existing roof membrane manufacturer stating that existing roof warranty has not been affected by Work performed under this Section.

#### **1.8 QUALITY ASSURANCE**

- A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

#### **1.9 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
  - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

#### **1.10 FIELD CONDITIONS**

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

#### **1.11 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
  - 1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, vapor retarder, and other components of roofing system.
  - 2. Warranty Period: 20 years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. General Performance: Installed roofing system and flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings shall remain watertight.
  - 1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
  - 2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.



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- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
- C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures when tested according to FM Approvals 4474, UL 580, or UL 1897: As designated per structural engineer on Drawings.
- D. ENERGY STAR Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low slope roof products.

## 2.2 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

- A. TPO Sheet: ASTM D6878/D6878M, internally fabric- or scrim-reinforced, fabric-backed TPO sheet.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle SynTec Incorporated.
    - b. Firestone Building Products.
    - c. John Mansville.
    - d. Sika Sarnafil.
  - 2. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.
  - 3. Thickness: 60 mils nominal.
  - 4. Exposed Face Color: White.

## 2.3 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
  - 1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.
  - 2. Verify adhesives and sealants comply with the following limits for VOC content:
    - a. Plastic Foam Adhesives: 50 g/L.
    - b. Gypsum Board and Panel Adhesives: 50 g/L.
    - c. Multipurpose Construction Adhesives: 70 g/L.
    - d. Fiberglass Adhesives: 80 g/L.
    - e. Contact Adhesives: 80 g/L.
    - f. PVC Welding Compounds: 510 g/L.
    - g. Other Adhesives: 250 g/L.
    - h. Single-Ply Roof Membrane Sealants: 450 g/L.
    - i. Nonmembrane Roof Sealants: 300 g/L.
    - j. Sealant Primers for Nonporous Substrates: 250 g/L.
    - k. Sealant Primers for Porous Substrates: 775 g/L.
- B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils thick, minimum, of same color as TPO sheet.
- C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- D. Roof Vents: As recommended by roof membrane manufacturer.
  - 1. Size: Not less than 4-inch diameter.

- E. Bonding Adhesive: Manufacturer's standard.
- F. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
- G. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick, prepunched.
- H. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.
- I. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

## 2.4 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by TPO roof membrane manufacturer.
- B.
  - 1. Extruded Polystyrene Board Insulation: ASTM C578, Type IV, 1.45-lb/cu. ft. minimum density, 40-psi minimum compressive strength square edged. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Owens Corning.
    - b. Dow Chemical Company.
    - c. CertainTeed Insulation.
    - d. Carlisle Syntec Systems.
  - 2. Thermal Resistance: R-value of 5.0 per inch.
  - 3. Size: 48 by 48 inches.
  - 4. Thickness:
    - a. Base Layer: 1-1/2 inches
- C. Tapered Insulation: Provide factory-tapered insulation boards.
  - 1. Material: Match roof insulation.
  - 2. Minimum Thickness: 1/4 inch.
  - 3. Slope:
    - a. Roof Field: 2 inch per foot unless otherwise indicated on Drawings.
    - b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

## 2.5 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.
- B. Fasteners: Factory-coated steel fasteners with metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation and cover boards to substrate, and acceptable to roofing system manufacturer.
- C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
  - 1. Modified asphaltic, asbestos-free, cold-applied adhesive.

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2. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
3. Full-spread, spray-applied, low-rise, two-component urethane adhesive.
4. Verify adhesives and sealants comply with the following limits for VOC content:
  - a. Plastic Foam Adhesives: 50 g/L.
  - b. Gypsum Board and Panel Adhesives: 50 g/L.
  - c. Multipurpose Construction Adhesives: 70 g/L.
  - d. Fiberglass Adhesives: 80 g/L.
  - e. Contact Adhesives: 80 g/L.
  - f. PVC Welding Compounds: 510 g/L.
  - g. Other Adhesives: 250 g/L.
  - h. Single-Ply Roof Membrane Sealants: 450 g/L.
  - i. Nonmembrane Roof Sealants: 300 g/L.
  - j. Sealant Primers for Nonporous Substrates: 250 g/L.
  - k. Sealant Primers for Porous Substrates: 775 g/L.

D. Cover Board: ASTM C1177/C1177M, glass-mat, water-resistant gypsum board or ASTM C1278/C1278M fiber-reinforced gypsum board.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - a. Georgia Pacific – DensDeck Prime
2. Thickness: 1/4 inch
3. Surface Finish: Factory primed.

## 2.6 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick and acceptable to roofing system manufacturer.
1. Size: Approximately Refer to drawings for location to determine size needed.
  2. Color: Contrasting with roof membrane.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
  2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
  3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 "Steel Decking."
  4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
  5. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than 75percent, or as recommended by roofing system manufacturer, when tested according to ASTM F2170.
  6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
  7. Verify that joints in precast concrete roof decks have been grouted flush with top of concrete.
  8. Verify that minimum curing period recommended by roofing system manufacturer for lightweight insulating concrete roof decks has passed.

9. Verify any damaged sections of cementitious wood-fiber decks have been repaired or replaced.
10. Verify adjacent cementitious wood-fiber panels are vertically aligned to within 1/8 inch at top surface.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Install sound-absorbing insulation strips according to acoustical roof deck manufacturer's written instructions.

### **3.3 INSTALLATION OF ROOFING, GENERAL**

- A. Install roofing system according to roofing system manufacturer's written instructions, SPRI's Directory of Roof Assemblies listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning Work on adjoining roofing.
- C. Install roof membrane and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition.
- D. Coordinate installation and transition of roofing system component serving as an air barrier with air barrier specified under Section 072726 "Fluid-Applied Membrane Air Barriers."

### **3.4 INSTALLATION OF INSULATION**

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.
- B. Comply with roofing system and roof insulation manufacturer's written instructions for installing roof insulation.
- C. Installation Over Metal Decking:
  1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.
    - a. Locate end joints over crests of decking.
    - b. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
    - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    - e. Fill gaps exceeding 1/4 inch with insulation.
    - f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
    - g. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.
      - 1) Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.

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2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.
    - a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
    - b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
    - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    - e. Fill gaps exceeding 1/4 inch with insulation.
    - f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
      - 1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
      - 2) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.
- D. Installation Over Wood Decking:
1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.
    - a. Where installing composite and noncomposite insulation in two or more layers, install noncomposite board insulation for bottom layer and intermediate layers, if applicable, and install composite board insulation for top layer.
    - b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - c. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    - d. Fill gaps exceeding 1/4 inch with insulation.
    - e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
  2. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to wood decks.
    - a. Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof.
  3. Install upper layers of insulation] with joints of each layer offset not less than 12 inches from previous layer of insulation.
    - a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
    - b. Install with long joints continuous and with end joints staggered not less than 12 inches in adjacent rows.
    - c. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - d. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    - e. Fill gaps exceeding 1/4 inch with insulation.
    - f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
      - 1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
      - 2) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

### **3.5 INSTALLATION OF COVER BOARDS**

- A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.
  - 1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
  - 2. At internal roof drains, conform to slope of drain sump.
    - a. Trim cover board so that water flow is unrestricted.
  - 3. Cut and fit cover board tight to nailers, projections, and penetrations.
  - 4. Loosely lay cover board over substrate.

### **3.6 INSTALLATION OF ADHERED ROOF MEMBRANE**

- A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll roof membrane and allow to relax before installing.
- C. Start installation of roofing in presence of roofing system manufacturer's technical personnel.
- D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.
- F. Fabric-Backed Roof Membrane Adhesive: Apply to substrate at rate required by manufacturer, and install fabric-backed roof membrane.
- G. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.
- H. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- I. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation.
  - 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
  - 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
  - 3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
- J. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

### **3.7 INSTALLATION OF BASE FLASHING**

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

### **3.8 INSTALLATION OF WALKWAYS**

- A. Flexible Walkways:
  - 1. Install flexible walkways at the following locations:
    - a. Perimeter of each rooftop unit.
    - b. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
    - c. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
    - d. Top and bottom of each roof access ladder.
    - e. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
    - f. Locations indicated on Drawings.
    - g. As required by roof membrane manufacturer's warranty requirements.
  - 2. Provide 6-inch clearance between adjoining pads.
  - 3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

### **3.9 FIELD QUALITY CONTROL**

- A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.
- B. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

### **3.10 PROTECTING AND CLEANING**

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION 075423**

**SECTION 076200**

**SHEET METAL FLASHING AND TRIM**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Manufactured reglets with counterflashing.
  - 2. Formed roof-drainage sheet metal fabrications.
  - 3. Formed low-slope roof sheet metal fabrications.
  - 4. Formed steep-slope roof sheet metal fabrications.
  - 5. Formed wall sheet metal fabrications.
  - 6. Formed equipment support flashing.
- B. Related Requirements:
  - 1. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking.
  - 2. Section 077100 "Roof Specialties" for manufactured copings, roof-edge specialties, roof-edge drainage systems, and counterflashings.
  - 3. Section 077200 "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.

**1.3 COORDINATION**

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each of the following
  - 1. Underlayment materials.
  - 2. Elastomeric sealant.
  - 3. Butyl sealant.
  - 4. Epoxy seam sealer.
- B. Shop Drawings: For sheet metal flashing and trim.
  - 1. Include plans, elevations, sections, and attachment details.
  - 2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
  - 3. Include identification of material, thickness, weight, and finish for each item and location in Project.
  - 4. Include details for forming, including profiles, shapes, seams, and dimensions.
  - 5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
  - 6. Include details of termination points and assemblies.
  - 7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
  - 8. Include details of roof-penetration flashing.



9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.
12. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Verification: For each type of exposed finish.

1. Sheet Metal Flashing: 12 inches long by actual width of unit, including finished seam and in required profile. Include fasteners, cleats, clips, closures, and other attachments.
2. Trim, Metal Closures, Expansion Joints, Joint Intersections, and Miscellaneous Fabrications: 12 inches long and in required profile. Include fasteners and other exposed accessories.
3. Unit-Type Accessories and Miscellaneous Materials: Full-size Sample.

## 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.

## 1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.
- B. Special warranty.

## 1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.
1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
  2. Protect stored sheet metal flashing and trim from contact with water.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

## 1.9 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  2. Finish Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to

weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

- B. Sheet Metal Standard for Flashing and Trim: Comply with [NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

## 2.2 SHEET METALS

- A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
  - 1. As-Milled Finish: Mill.
  - 2. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 3. Color: As selected by Architect from manufacturer's full range.
- C. Stainless Steel Sheet :ASTM A240/A240M, Type 304dead soft, fully annealed; with smooth, flat] surface. Finish: ASTM A480/A480M, No. 2B (bright, cold rolled)
  - a. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
  - b. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
    - 1) Run grain of directional finishes with long dimension of each piece.
    - 2) When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

## 2.3 UNDERLAYMENT MATERIALS

- A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.

## 2.4 MISCELLANEOUS MATERIALS

- A. Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
  - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
  - b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
  - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.
- C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- D. Elastomeric Sealant: ASTM C920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- E. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- F. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.
- G. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.
  1. Source Limitations: Obtain reglets from single source from single manufacturer.
  2. Material: Aluminum, 0.024 inch thick.
  3. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
  4. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
  5. Accessories:
    - a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
    - b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
- H. Finish: Mill.

## **2.5 FABRICATION, GENERAL**

- A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.
  1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.

4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.

G. Seams:

1. Fabricate nonmoving seams with flat-lock seams. Tin edges to be seamed, form seams, and solder.
2. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use.
3. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer.

H. Do not use graphite pencils to mark metal surfaces.

## 2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 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: 6" x 6", field verify existing scupper dimensions.

1. Aluminum: 0.032 inch thick.

## 2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long sections. Furnish with 6-inch-wide, joint cover plates

1. Joint Style: Overlapped, 4 inches wide.
2. Fabricate with scuppers spaced 10 feet apart, to dimensions required with 4-inch-wide flanges and base extending 4 inches beyond cant or tapered strip into field of roof. Fasten gravel guard angles to base of scupper. Fabricate from the following materials:
  - a. Stainless Steel: 0.0188 inch thick.

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- B. Copings: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, fasten and seal watertight. Shop fabricate interior and exterior corners.
  - 1. Joint Style: Butted with expansion space and 6-inch-wide, concealed backup plate.
  - 2. Fabricate from the following materials:
    - a. Aluminum: 0.050 inch thick.
- C. Roof-to-Wall Transition Roof-to-Roof Edge-Flashing Transition Expansion-Joint Cover: Shop fabricate interior and exterior corners. Fabricate from the following materials:
  - Aluminum: 0.050 inch thick.
- D. Base Flashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
  - 1. Aluminum: 0.040 inch thick.
- E. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- F. Flashing Receivers: Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- G. Roof-Penetration Flashing: Fabricate from the following materials:
  - 1. Aluminum Zinc Alloy Coated Steel 0.028 inch thick.

**2.8 STEEP-SLOPE ROOF SHEET METAL FABRICATIONS**

- A. Apron, Step, Cricket, and Backer Flashing: Fabricate from the following materials:
- B. Aluminum:[0.032 inch thick. Valley Flashing: Fabricate from the following materials:
  - 1. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.
- C. Drip Edges: Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- D. Eave, Rake, Ridge, and Hip Flashing: Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- E. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- F. Flashing Receivers: Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
- G. Roof-Penetration Flashing: Fabricate from the following materials:
  - 1. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

**2.9 WALL SHEET METAL FABRICATIONS**

- A. Through Wall Flashing: Fabricate continuous flashings in minimum 96-inch-long, but not exceeding 12-foot-long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch-high, end dams. Fabricate from the following materials:
  - 1. Stainless Steel: 0.0156 inch thick.

- B.
  - 1. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch-high, end dams. Fabricate from the following materials:
- C. Aluminum: 0.032 inch thick. Wall Expansion-Joint Cover: Fabricate from the following materials:
  - 1. Aluminum: 0.040 inch thick.
  - 2.

## **2.10 MISCELLANEOUS SHEET METAL FABRICATIONS**

- A. Equipment Support Flashing: Fabricate from the following materials:
  - 1. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.
- B. Overhead-Piping Safety Pans: Fabricate from the following materials:
  - 1. Aluminum-Zinc Alloy-Coated Steel: 0.040 inch thick.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.
  - 1. Verify compliance with requirements for installation tolerances of substrates.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
  - 3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION OF UNDERLAYMENT**

- A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim.
  - 1. Install in shingle fashion to shed water.
  - 2. Lap joints not less than 2 inches.

### **3.3 INSTALLATION, GENERAL**

- A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.
  - 1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
  - 3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
  - 4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
  - 5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
  - 6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.

7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
  8. Do not field cut sheet metal flashing and trim by torch.
  9. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.
1. Coat concealed side of uncoated-aluminum and stainless steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.
1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
  2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
  3. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
1. Use sealant-filled joints unless otherwise indicated.
    - a. Embed hooked flanges of joint members not less than 1 inch into sealant.
    - b. Form joints to completely conceal sealant.
    - c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
    - d. Adjust setting proportionately for installation at higher ambient temperatures.
      - 1) Do not install sealant-type joints at temperatures below 40 deg F.
  2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.
1. Do not solder metallic-coated steel and aluminum sheet.

### **3.4 INSTALLATION OF ROOF-DRAINAGE SYSTEM**

- A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Parapet Scuppers:
1. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.

2. Anchor scupper closure trim flange to exterior wall and solder or seal with elastomeric sealant to scupper.
  3. Loosely lock front edge of scupper with conductor head.
  4. Solder or seal with elastomeric sealant exterior wall scupper flanges into back of conductor head.
- C. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated on Drawings. Lap joints minimum of 4 inches in direction of water flow.

### **3.5 INSTALLATION OF ROOF FLASHINGS**

- A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.
1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
  2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing:
1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
  2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inchcenters.
- C. Copings:
1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
  2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated.
    - a. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 24-inchcenters.
    - b. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inchcenters.
  3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals' listing for required windstorm classification.
- D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless steel draw band and tighten.
- E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.
1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
  2. Extend counterflashing 4 inches over base flashing.
  3. Lap counterflashing joints minimum of 4 inches.
  4. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant unless otherwise indicated.
- F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

### **3.6 INSTALLATION OF WALL FLASHINGS**

- A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.



- B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

### **3.7 INSTALLATION OF MISCELLANEOUS FLASHING**

- A. Equipment Support Flashing:
  - 1. Coordinate installation of equipment support flashing with installation of roofing and equipment.
  - 2. Weld or seal flashing with elastomeric sealant to equipment support member.
- B. Overhead-Piping Safety Pans:
  - 1. Suspend pans from structure above, independent of other overhead items such as equipment, piping, and conduit, unless otherwise indicated on Drawings.
  - 2. Pipe and install drain line to plumbing waste or drainage system.

### **3.8 INSTALLATION TOLERANCES**

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

### **3.9 CLEANING**

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.

### **3.10 PROTECTION**

- A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.
- C. Maintain sheet metal flashing and trim in clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

**END OF SECTION 076200**

## SECTION 077100

### ROOF SPECIALTIES

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Copings.
  - 2. Roof-edge specialties.
  - 3. Reglets and counterflashings.
- B. Related Requirements:
  - 1. Section 055000 "Metal Fabrications" for downspout guards and downspout boots.
  - 2. Section 061000 "Rough Carpentry" for wood nailers, curbs, and blocking.
  - 3. Section 076200 "Sheet Metal Flashing and Trim" for custom- and site-fabricated sheet metal flashing and trim.
  - 4. Section 077200 "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.
  - 5. Section 079200 "Joint Sealants" for field-applied sealants between roof specialties and adjacent materials.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For roof specialties.
  - 1. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.
  - 2. Include details for expansion and contraction; locations of expansion joints, including direction of expansion and contraction.
  - 3. Indicate profile and pattern of seams and layout of fasteners, cleats, clips, and other attachments.
  - 4. Detail termination points and assemblies, including fixed points.
  - 5. Include details of special conditions.
- C. Samples for Verification:
  - 1. Include Samples of each type of roof specialty to verify finish and color selection, in manufacturer's standard sizes.
  - 2. Include copings made from 12-inch lengths of full-size components in specified material, and including fasteners, cover joints, accessories, and attachments.

##### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. Product Certificates: For each type of roof specialty.
- C. Product Test Reports: For copings for tests performed by a qualified testing agency.

- D. Sample Warranty: For manufacturer's special warranty.

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For roofing specialties to include in maintenance manuals.

#### **1.6 QUALITY ASSURANCE**

- A. Source Limitations: Obtain roof specialties approved by manufacturer providing roofing-system warranty specified in Section 075423 "Thermoplastic-Polyolefin (TPO) Roofing".

#### **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.
- B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof-specialty installation.

#### **1.8 FIELD CONDITIONS**

- A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication, and indicate measurements on Shop Drawings.
- B. Coordination: Coordinate roof specialties with flashing, trim, and construction of parapets, roof deck, roof and wall panels, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

#### **1.9 WARRANTY**

- A. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

#### **2.2 COPINGS**

- A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet, concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Carlisle Syntec Systems.
  - b. ATAS International, Inc.
  - c. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.
  - d. MBCI.
2. Formed Aluminum Sheet Coping Caps: Aluminum sheet, 0.040 inch thick thickness as required to meet performance requirements.
- a. Surface: Smooth, flat finish.
  - b. Finish: Two-coat fluoropolymer
  - c. Color: As selected by Architect from manufacturer's full range.
3. Corners: Factory mitered and mechanically clinched and sealed watertight.
4. Coping-Cap Attachment Method: Snap-on or face leg hooked to continuous cleat with back leg fastener exposed, fabricated from coping-cap material.
- a. Snap-on Coping Anchor Plates: Concealed, galvanized-steel sheet, 12 inches wide, with integral cleats.
  - b. Face-Leg Cleats: Concealed, continuous galvanized-steel sheet .

### **2.3 ROOF-EDGE SPECIALTIES**

- A. Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of snap-on metal fascia cover in section lengths not exceeding 12 feet and a continuous metal receiver with integral drip-edge cleat to engage fascia cover and secure single-ply roof membrane. Provide matching corner units.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle Syntec Systems.
    - b. ATAS International, Inc.
    - c. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.
    - d. MBCI.
  2. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, [thickness as required to meet performance requirements .
    - a. Surface: Smooth, flat finish.
    - b. Finish: Two-coat fluoropolymer
    - c. Color: As selected by Architect from manufacturer's full range.
  3. Corners: Factory mitered and mechanically clinched and sealed watertight.
  4. Splice Plates: Concealed of same material, finish, and shape as fascia cover.
  5. Receiver: Manufacturer's standard material and thickness.

## **2.4 REGLETS AND COUNTERFLASHINGS**

- A. Reglets: Manufactured units formed to provide secure interlocking of separate reglet and counterflashing pieces, from the following exposed metal:
  - 1. .
  - 2. Formed Aluminum: 0.024 inch thick.
  - 3. Corners: Factory mitered and mechanically clinched and sealed watertight.
  - 4. Surface-Mounted Type: Provide reglets with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge. Masonry Type, Embedded: Provide reglets with offset top flange for embedment in masonry mortar joint.
  - 5. Multiuse Type, Embedded: For multiuse embedment in masonry mortar joints.
- B. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in lengths not exceeding 12 feet designed to snap into reglets or through-wall-flashing receiver and compress against base flashings with joints lapped, from the following exposed metal:
  - 1. Formed Aluminum: 0.024 inch thick.
- C. Aluminum Finish: Mill.

## **2.5 MATERIALS**

Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

## **2.6 UNDERLAYMENT MATERIALS**

- A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.

## **2.7 MISCELLANEOUS MATERIALS**

- A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
  - 1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.
  - 2. Fasteners for Aluminum: Aluminum or Series 300 stainless steel..
- B. Elastomeric Sealant: ASTM C920, elastomeric silicone polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.
- C. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.

## **2.8 FINISHES**

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Coil-Coated Galvanized-Steel Sheet Finishes:

1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with ASTM A755/A755M and coating and resin manufacturers' written instructions.
  - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - b. Concealed Surface Finish: Apply pretreatment and manufacturer's standard acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.
- E. Coil-Coated Aluminum Sheet Finishes:
  1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    - b. Concealed Surface Finish: Apply pretreatment and manufacturer's standard acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.
- C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage where applicable, and securely anchored.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION OF UNDERLAYMENT**

- A. Felt Underlayment: Install with adhesive for temporary anchorage to minimize use of mechanical fasteners under roof specialties. Apply in shingle fashion to shed water, with lapped joints of not less than 2 inches.

#### **3.3 INSTALLATION, GENERAL**

- A. Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
  1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
  2. Provide uniform, neat seams with minimum exposure of solder and sealant.
  3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
  4. Torch cutting of roof specialties is not permitted.
  5. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

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1. Coat concealed side of uncoated aluminum and stainless steel roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

1. Space movement joints at a maximum of 12 feet with no joints within 18 inches of corners or intersections unless otherwise indicated on Drawings.
2. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

D. Fastener Sizes: Use fasteners of sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance..

E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.

F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F.

### 3.4 INSTALLATION OF COPINGS

A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

1. Interlock face and back leg drip edges of snap-on coping cap into cleated anchor plates anchored to substrate at manufacturer's required spacing that meets performance requirements .

### 3.5 INSTALLATION OF ROOF-EDGE SPECIALITIES

A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

### 3.6 INSTALLATION OF ROOF-EDGE DRAINAGE-SYSTEM

A. Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.

B. Parapet Scuppers: Install scuppers through parapet where indicated. 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 or solder to scupper.
2. Loosely lock front edge of scupper with conductor head.
3. Seal or solder exterior wall scupper flanges into back of conductor head

### 3.7 INSTALLATION OF REGLETS AND COUNTERFLASHINGS

A. Coordinate installation of reglets and counterflashings with installation of base flashings.

B. Surface-Mounted Reglets: Install reglets to receive flashings where flashing without embedded reglets is indicated on Drawings. Install at height so that inserted counterflashings overlap 4 inches over top edge of base flashings.

- C. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches and bed with butyl sealant. Fit counterflashings tightly to base flashings.

**3.8 CLEANING AND PROTECTION**

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.
- D. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

**END OF SECTION 077100**



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**SECTION 077200**

**ROOF ACCESSORIES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Roof curbs.
  - 2. Equipment supports.
  - 3. Roof hatches.
  - 4. Preformed flashing sleeves.
- B. Related Requirements:
  - 1. Section 055000 "Metal Fabrications" for metal vertical ladders, ships' ladders, and stairs for access to roof hatches.
  - 2. Section 055213 "Pipe and Tube Railings" for safety railing systems not attached to roof-hatch curbs.
  - 3. Section 076200 "Sheet Metal Flashing and Trim" for shop- and field-formed metal flashing, roof-drainage systems, roof expansion-joint covers, and miscellaneous sheet metal trim and accessories.
  - 4. Section 077100 "Roof Specialties" for manufactured fasciae, copings, gravel stops, gutters and downspouts, and counterflashing.

**1.3 COORDINATION**

- A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leak proof, weathertight, secure, and noncorrosive installation.
- B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of roof accessory.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: For roof accessories.
  - 1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.
- C. Delegated-Design Submittal: For roof curbs equipment supports indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  - 1. Detail mounting, securing, and flashing of roof-mounted items to roof structure. Indicate coordinating requirements with roof membrane system.
  - 2. Wind-Restraint Details: Detail fabrication and attachment of wind restraints. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.

### **1.5 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:
  - 1. Size and location of roof accessories specified in this Section.
  - 2. Method of attaching roof accessories to roof or building structure.
  - 3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
  - 4. Required clearances.
- B. Sample Warranties: For manufacturer's special warranties.

### **1.6 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

### **1.7 WARRANTY**

- A. Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof accessories that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

### **2.2 ROOF CURBS**

- A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints integral metal cant, and integrally formed deck-mounting flange at perimeter bottom.
- B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
- C. Supported Load Capacity: Coordinate load capacity with information on Shop Drawings of equipment to be supported.
- D. Material: Aluminum-zinc alloy-coated steel sheet, 0.052 inch thick.
  - 1. Finish: Two-coat fluoropolymer.
  - 2. Color: As selected by Architect from manufacturer's full range .
- E. Material: Aluminum sheet, 0.090 inch thick.
  - 1. Finish: Mill.
- F. Construction:
  - 1. Curb Profile: Manufacturer's standard compatible with roofing system.
  - 2. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.

3. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
4. Top Surface: Level top of curb, with roof slope accommodated by sloping deck-mounting flange
5. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.
6. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.
7. Nailer: Factory-installed wood nailer along top flange of curb continuous around curb perimeter.
8. Platform Cap: Where portion of roof curb is not covered by equipment, provide weathertight platform cap formed from 3/4-inch-thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
9. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as curb.

### **2.3 EQUIPMENT SUPPORTS**

- A. Equipment Supports: Internally reinforced perimeter metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, integral metal cant and integrally formed structure-mounting flange at bottom.
- B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
- C. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch thick.
  1. Finish: Mill phosphatized
- D. Material: Aluminum sheet, 0.090 inch thick.
  1. Finish: Mill
- E. Construction:
  1. Curb Profile: Manufacturer's standard compatible with roofing system.
  2. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.
  3. Nailer: Factory-installed continuous wood nailers 3-1/2 inches wide on top flange of equipment supports continuous around support perimeter.
  4. Platform Cap: Where portion of equipment support is not covered by equipment, provide weathertight platform cap formed from 3/4-inch-thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
  5. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
  6. Fabricate equipment supports to minimum height of 12 inches above roofing surface unless otherwise indicated.
  7. Sloping Roofs: Where roof slope exceeds 1:48, fabricate each support with height to accommodate roof slope so that tops of supports are level with each other. Equip supports with water diverters or crickets on sides that obstruct water flow.

### **2.4 ROOF HATCHES**

- A. Roof Hatches: Metal roof-hatch units with lids and insulated single walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing integral metal cant, and integrally formed deck-mounting flange at perimeter bottom.
  1. Bilco: Type-S.
- B. Hatch Material: Zinc-coated (galvanized) steel sheet.

1. Thickness: Manufacturer's standard thickness for hatch size indicated.
  2. Finish: [Baked enamel or powder coat
  3. Color: As selected by Architect from manufacturer's full range.
- C. Construction:
1. Insulation: 1-inch-thick, glass-fiber board [2-inch-thick, polyisocyanurate board.
  2. Nailer: Factory-installed wood nailer continuous around hatch perimeter.
  3. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
  4. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.
  5. On ribbed or fluted metal roofs, form flange at perimeter bottom to conform to roof profile.
  6. Fabricate curbs to minimum height of 12 inches > above roofing surface unless otherwise indicated.
  7. Sloping Roofs: Where slope or roof deck exceeds 1:48, fabricate curb with perimeter curb height that is tapered to accommodate roof slope so that top surfaces of perimeter curb are level. Equip hatch with water diverter or cricket on side that obstructs water flow.
- D. Hardware: Spring operators, hold-open arm, galvanize steel spring latch with turn handles, galvanized steel butt- or pintle-type hinge system, and padlock hasps inside and outside.
- E. Safety Railing System: Roof-hatch manufacturer's standard system including rails, clamps, fasteners, safety barrier at railing opening, and accessories required for a complete installation; attached to roof hatch and complying with 29 CFR 1910.23 requirements and authorities having jurisdiction.
1. Height: 42 inches, per IMC 2018 above finished roof deck.
  2. Posts and Rails: Galvanized-steel pipe, 1-1/4 inches in diameter or galvanized-steel tube, 1-5/8 inches in diameter.
  3. Flat Bar: Galvanized steel, 2 inches high by 3/8 inch thick.
  4. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.

## 2.5 METAL MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 coating designation and mill phosphatized for field painting where indicated.
1. Mill-Phosphatized Finish: Manufacturer's standard for field painting.
- B. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A792/A792M, AZ50 coated.
1. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2 mil.
- C. Aluminum Sheet: ASTM B209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.
1. Mill Finish: As manufactured.
- D. Aluminum Extrusions and Tubes: ASTM B221, manufacturer's standard alloy and temper for type of use, finished to match assembly where used; otherwise mill finished.
- E. Stainless Steel Sheet and Shapes: ASTM A240/A240M or ASTM A666, Type 304.
- F. Steel Tube: ASTM A500/A500M, round tube.
- G. Galvanized-Steel Tube: ASTM A500/A500M, round tube, hot-dip galvanized according to ASTM A123/A123M.
- H. Steel Pipe: ASTM A53/A53M, galvanized.

## **2.6 MISCELLANEOUS MATERIALS**

- A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Polyisocyanurate Board Insulation: ASTM C1289, thickness and thermal resistivity as indicated.
- C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.
- D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.
- E. Underlayment:
  - 1. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
  - 2. Polyethylene Sheet: 6-mil-thick polyethylene sheet complying with ASTM D4397.
- F. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:
  - 1. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
  - 2. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.
- G. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.
- H. Elastomeric Sealant: ASTM C920, elastomeric [silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.
- I. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

## **2.7 GENERAL FINISH REQUIREMENTS**

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- C. Verify dimensions of roof openings for roof accessories.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Install roof accessories according to manufacturer's written instructions.
  - 1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
  - 2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.

3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
  4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
  2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
- C. Roof Curb Installation: Install each roof curb so top surface is level.
- D. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.
- E. Roof-Hatch Installation:
1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
  2. Attach safety railing system to roof-hatch curb.
  3. Attach ladder-assist post according to manufacturer's written instructions.
- F. Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.
- 3.3 REPAIR AND CLEANING**
- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780/A780M.
- B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting."
- C. Clean exposed surfaces according to manufacturer's written instructions.
- D. Clean off excess sealants.
- E. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

**END OF SECTION 077200**

**SECTION 078100.13**

**SPRAY APPLIED FIRE RESISTIVE MATERIALS – UL DESIGN D925 & X772**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes sprayed fire-resistive materials (SFRM).

**1.3 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site
  - 1. Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Framing plans, schedules, or both, indicating the following:
  - 1. Extent of fireproofing for each construction and fire-resistance rating.
  - 2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
  - 3. Minimum fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
  - 4. Treatment of fireproofing after application.
- C. Samples: For each exposed product and for each color and texture specified, 4 inches square in size.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer and testing agency.
- B. Product Certificates: For each type of fireproofing.
- C. Evaluation Reports: For fireproofing, from ICC-ES.
- D. Preconstruction Test Reports: For fireproofing.
- E. Field quality-control reports.

**1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

**1.7 FIELD CONDITIONS**

- A. Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is 40 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.
- B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.



## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.
- B. Source Limitations: Obtain fireproofing from single source.
- C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119 or UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Steel members are to be considered unrestrained unless specifically noted otherwise.
- D. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction.
  - 1. Flat Paints and Coatings: 50 g/L.
  - 2. Nonflat Paints and Coatings: 150 g/L.
  - 3. Primers, Sealers, and Undercoaters: 200 g/L.
  - 4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
- E. Low-Emitting Materials: Fireproofing used within the weatherproofing system 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."
- F. Asbestos: Provide products containing no detectable asbestos.

### 2.2 SPRAYED FIRE-RESISTIVE MATERIALS

- A. Standard Durability SFRM Interior Locations, Concealed Conditions: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application.
  - 1. Products: Subject to compliance with requirements, provide the following:
    - a. GCP Advanced Technologies Construction Products; GCP Advanced Technologies -- Conn; GCP Advanced Technologies Construction Products; Monokote MK-6 Series
  - 2. Bond Strength: Minimum 200-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E 736.
  - 3. Density: Not less than 15 lb/cu. ft. and as specified in the approved fire-resistance design, according to ASTM E 605.
  - 4. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E 605, whichever is thicker, but not less than 0.375 inch (9 mm).
  - 5. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
    - a. Flame-Spread Index: 0.
    - b. Smoke-Developed Index: 0.
  - 6. Compressive Strength: Minimum 10 lbf/sq. in. according to ASTM E 761.
  - 7. Corrosion Resistance: No evidence of corrosion according to ASTM E 937.
  - 8. Deflection: No cracking, spalling, or delamination according to ASTM E 759.
  - 9. Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.
  - 10. Air Erosion: Maximum weight loss of 0.0 g/sq. ft. in 24 hours according to ASTM E 859.
  - 11. Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G 21.
  - 12. Finish: Spray-textured finish.
- B. Prime substrates where included in fire-resistance design and where recommended in writing by fireproofing manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fireproofing.
- C. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

## 2.3 APPLICATION

- A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.
- B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.
  - 1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
  - 2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.
- D. Metal Decks:
  - 1. Do not apply fireproofing to underside of metal deck substrates until concrete topping, if any, has been completed.
  - 2. Do not apply fireproofing to underside of metal roof deck until roofing has been completed; prohibit roof traffic during application and drying of fireproofing.
- E. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.
- F. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.
- G. Extend fireproofing in full thickness over entire area of each substrate to be protected.
- H. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.
- I. For applications over encapsulant materials, including lockdown (post-removal) encapsulants, apply fireproofing that differs in color from that of encapsulant over which it is applied.
- J. Where sealers are used, apply products that are tinted to differentiate them from fireproofing over which they are applied.
- K. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.
- L. Cure fireproofing according to fireproofing manufacturer's written recommendations.
- M. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.
- N. Finishes: Where indicated, apply fireproofing to produce the following finishes:
  - 1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.
  - 2. Spray-Textured Finish: Finish left as spray applied with no further treatment.
  - 3. Rolled, Spray-Textured Finish: Even finish produced by rolling spray-applied finish with a damp paint roller to remove drippings and excessive roughness.
  - 4. Skip-Troweled Finish: Even leveled surface produced by troweling spray-applied finish to smooth out the texture and neaten edges.
  - 5. Skip-Troweled Finish with Corner Beads: Even, leveled surface produced by troweling spray-applied finish to smooth out the texture, eliminate surface markings, and square off edges.

#### **2.4 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Test and inspect as required by the IBC, 1704.10.
- B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- C. Fireproofing will be considered defective if it does not pass tests and inspections.
  - 1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
  - 2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.
- D. Prepare test and inspection reports.

#### **2.5 CLEANING, PROTECTING, AND REPAIRING**

- A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.
- B. Protect fireproofing, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.
- C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.
- D. Repair fireproofing damaged by other work before concealing it with other construction.
- E. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

**END OF SECTION 078100.1**

**SECTION 078100.16**

**SPRAY APPLIED FIRE RESISTIVE MATERIALS – UL DESIGN P827**

**PART 1 - GENERAL**

**1.1 WORK INCLUDED**

1.1.1 Work under this section includes the furnishing of all labor, materials, equipment, and services necessary to and incidental to, the complete and proper installation of all spray applied fireproofing and related work as specified herein, and in accordance with all requirements of contract documents.

1.1.2 The material and installation shall conform to the applicable building code requirements of all authorities having jurisdiction.

**1.2 RELATED WORK**

(See section 3.1)

**1.3 QUALITY ASSURANCE**

1.3.1 Fireproofing work shall be performed by a firm acceptable to the sprayed fireproofing material manufacturer.

1.3.2 Fireproofing material shall be applied by factory trained applicators only.

1.3.3 Products, execution, and fireproofing thickness shall conform with the applicable code requirements for the fire ratings specified.

**1.4 REFERENCES**

**1.4.1 ASTM STANDARDS**

E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

E119 - Standard Test Methods of Fire Tests of Building Construction and Materials.

E605 - Standard Test Methods for Thickness and Density of Sprayed Fire Resistive Materials Applied to Structural Members.

E736 - Standard Test Methods for Cohesion Adhesion of Sprayed Fire Resistive Materials Applied to Structural Members.

E759 - Standard Test Method of Deflection on Sprayed Fire Resistive Materials Applied to Structural Members.

E760 - Standard Test Method for Effect of Impact on Bonding of Sprayed Fire Resistive Materials Applied to Structural Members.

E761 - Standard Test Method for Compressive Strength of Sprayed Fire Resistive Materials Applied to Structural Members.

C569 - Standard Test Method for Indentation Hardness of Spray Fire Resistive Materials Applied to Structural Members.

E859 - Standard Test Method for Air Erosion of Sprayed Fire Resistive Materials Applied to Structural Members.

E937 - Standard Test Method for Corrosion of Sprayed Fire Resistive Materials Applied to Bare Steel, Shop Coated Steel, and Galvanized Steel.

C739 - Standard Test Method for Corrosion of Sprayed Fire Resistive Materials Applied to Copper, Steel, and Aluminum.

C739 - Standard Test Method for Fungus Resistance of Sprayed Fire Resistive Materials.

E136 - Standard Test Method for Combustibility of Building Materials.

1.4.2 Underwriters Laboratories Inc. (ULI) Fire Resistive Directory (Latest Edition)

1.4.2 Southwest Research Institute (SWRI) Listing Directory

## **1.5 DELIVERY, STORAGE, HANDLING**

1.5.1 Delivery: Material shall be delivered to the site as follows:

(i) 30 lb. bags of fiber in original manufacturers wrappings, bearing the U.L. or SWRI label, and clearly marked to identify contents.

(ii) 55 gallon steel drums of adhesive with original manufacturers labels, bearing the A-23 trademark, and clearly marked to identify contents.

1.5.2 Storage and Handling: Products have unlimited shelf life and may be stored for prolonged periods of time. Bagged material must be kept dry and protected from moisture. Any bags found to be wet shall be deemed unfit for use, and discarded. Barreled adhesive must be protected from damage, i.e. forklift forks. A-23 Adhesive is not affected by freezing, but must be thoroughly thawed and agitated before use if freezing should occur.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURER**

2.1.1 The fireproofing material shall be sprayed fiber type manufactured under the brand name DENDAMIX by:

American Sprayed Fibers, Inc.

PO Box 1111, Fredericksburg, TX, 78624

Tel: (800) 824-2997

**2.2 MATERIALS**

2.2.1 Materials shall be asbestos-free DENDAMIX Lightweight Fireproofing System, and A-23 liquid adhesive, applied to conform to the drawings, specifications, and following test criteria.

2.2.2 Surface Burning Characteristics: When tested in accordance with ASTM E84, the material shall exhibit the following surface burning characteristics:

FLAME SPREAD.....0

SMOKE DEVELOPED.....0

FUEL CONTRIBUTED.....0

2.2.3 The material shall have been tested and reported by Underwriters Laboratories, Inc. (ULI) and Southwest Research Institute (SWRI) in accordance with the procedure of ASTM E119.

2.2.4 Thickness and Density: When tested in accordance with ASTM E605, the material shall meet the minimum individual and average density values, and minimum thickness values as listed in the appropriate UL or SWRI design, or as required by the authority having jurisdiction.

2.2.5 Cohesion/Adhesion (bond strength): When tested in accordance with ASTM E736, the material shall have a minimum bond strength of 357 lbs. ft<sup>2</sup> applied over uncoated wood, steel, brick, block, concrete, glass, or galvanized steel.

2.2.6 Deflection: When tested in accordance with ASTM E759, the material shall not crack or delaminate from the surface which it was applied.

2.2.7 Bond Impact: When tested in accordance with ASTM E760 the material shall not crack or delaminate from the surface which it was applied.

2.2.8 Compressive Strength: When tested in accordance with ASTM E761 the material shall not deform more than 10% when subjected to a crushing force of 500 lbs. ft<sup>2</sup>.

2.2.9 Indentation Hardness: When tested in accordance with ASTM C569, the material shall not indent more than 5 inches (13mm).

2.2.10 Air Erosion: When tested in accordance with ASTM E859, material loss from the finished application shall not exceed .025 G/ft<sup>2</sup>.

2.2.11 Corrosion Resistance: When tested in accordance with ASTM E937, the material shall not promote corrosion of bare steel, shop coated steel, or galvanized steel. When tested in accordance with ASTM C739, the material shall not promote corrosion of copper, steel, or aluminum.

2.2.12 Fungus Resistance: When tested in accordance with ASTM C739, the material shall not support the growth of fungus.

2.2.13 Sprayed fireproofing material shall be free of asbestos, asbestos contaminated vermiculite, chrysotile, amosite, crocidolite, actinolite, tremolite, or anthophyllite. Sprayed fireproofing manufacturer shall provide written certification of no asbestos content upon request.

2.2.14 Combustibility: When tested in accordance with ASTM E-136, the material shall be non-combustible.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

3.1.1 All surfaces to be fireproofed shall be free of dirt, oil, wax, rust, loose mill scale, paints/primers, or any other foreign matter that may impair adhesion of sprayed fireproofing to the substrate. Where necessary, cleaning of the surfaces to be fireproofed shall be the responsibility of the Structural Steel Erector or the General Contractor.

3.1.2 Compatibility of Surfaces: The project architect shall determine whether the painted/primed substrates have been tested in accordance with ASTM E119, with specified fireproofing, to provide the required fire resistance rating.

3.1.3 DENDAMIX will adhere to most clean structural surfaces however, the use of a primer coat may be necessary on painted/primed asbestos lockdown surfaces. Contact manufacturer for further compatibility information.

3.1.4 Clips, hangers, support sleeves and other attachments shall be in place before application of fireproofing.

3.1.5 Rolling compounds and lubricants used in the manufacture of steel decking and steel siding may impair adhesion of fireproofing to the substrate. Steel deck and steel siding specifications shall call for the deck siding manufacturer to supply deck free of such compounds or lubricants. Ducts, pipes, or other suspended matter shall not be installed until fireproofing application is completed.

3.1.6 Metal sidings used in the pre-engineered steel building industry are coated with a wide variety of interior (backer) finishes. Certain types of backer coatings may require the application of a primer to ensure adhesion of sprayed fireproofing to the substrate. The project architect shall determine the type of backer coating used, and compatibility with the fireproofing material. Contact American Sprayed Fibers, Inc. for information on backer coatings, compatibility, and acceptable fireproofing primers.

3.1.7 The project architect shall call for a galvanized interior (backer) coating in steel siding specifications if possible.

3.1.8 All roofing applications shall be completed prior to application of fireproofing to the underside of roof decks. All roof traffic shall be prohibited upon beginning of fireproofing application, and until the fireproofing material is fully cured and dried.

3.1.9 All concrete work shall be completed prior to application of fireproofing to underside of steel deck.

3.1.10 The applicator shall provide all necessary drop cloths masking, and coverings, to prevent fireproofing overspray

3.1.11 Application of fireproofing shall not begin until the applicator and general contractor have inspected the surfaces to be fireproofed, and perform bond strength tests to determine these surfaces acceptable to receive fireproofing material.

3.1.12 When the outdoor temperature is below 32 degrees F, substrate and ambient temperature of 35 degrees F or higher must be maintained for 24 hours before, during, and 24 hours after application of the fireproofing. If necessary, the general contractor shall provide heated enclosures to maintain proper temperatures for job progress. Drying time will depend on thickness sprayed.

3.1.13 Beginning of installation means applicator accepts existing substrate conditions and environmental conditions.

3.1.14 Project Architect, Owner, General contractor, and applicator must agree on finish texture of material before commencement of work

### **3.2 APPLICATION**

3.2.1 Application procedure and equipment shall conform to the fireproofing manufacturers application instructions.

3.2.2 The fireproofing contractor shall cooperate with the other trades in coordination and scheduling of work to avoid impeding job progress.

3.2.3 Maintain proper temperature and ventilation necessary for application and curing/drying of sprayed fireproofing.

3.2.4 All patching and repairing of sprayed fireproofing due to damage by other trades shall be performed under this section and paid for by the trade(s) responsible for the damage.

### **3.3 FIELD QUALITY CONTROL**

3.3.1 Fireproofing shall be installed by factory trained applicators only.

3.3.2 The project architect may select an independent testing laboratory to sample and verify the thickness and density of fireproofing in accordance with the provisions of ASTM E605, Standard Test Methods for Thickness and Density of Sprayed Fire Resistive Materials applied to Structural Members.

### **3.4 CLEANING**

3.4.1 Upon completion of fireproofing work, application equipment shall be removed and all surfaces not to be sprayed shall be cleaned of any fireproofing material deposits.

**END OF SECTION 078100.16**



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**SECTION 078100.19**

**SPRAY APPLIED FIRE RESISTIVE MATERIALS – UL DESIGN X790**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes Sprayed-Applied Fire-Resistive Materials (SFRMs).

**1.3 PREINSTALLATION MEETINGS**

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Framing plans, schedules, or both, indicating the following:
  - 1. Extent of fireproofing for each construction and fire-resistance rating.
  - 2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
  - 3. Minimum fireproofing thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
  - 4. Treatment of fireproofing after application.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer and testing agency.
- B. Product Certificates: For each type of fireproofing.
- C. Evaluation Reports: For fireproofing, from third party.
- D. Preconstruction Test Reports: For fireproofing.
- E. Field quality-control reports.

## **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by fireproofing manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.
- C. It is recommended that industry guidelines as noted in National Fireproofing Contractors Association (NFCA) 100 – Standard Practice for the Application of Spray-Applied Fire Resistive Materials (SFRMs) be maintained on the project site.

## **1.7 PRECONSTRUCTION TESTING**

- A. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on fireproofing.
  - 1. Provide test specimens and assemblies representative of proposed materials and construction.
- B. Preconstruction Adhesion and Compatibility Testing: Test for compliance with requirements for specified performance and test methods.
  - 1. Bond Strength: Test for cohesive and adhesive strength according to ASTM E 736. Provide bond strength indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
  - 2. Density: Test for density according to ASTM E 605. Provide density indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
  - 3. Verify that manufacturer, through its own laboratory testing or field experience, attests that primers or coatings are compatible with fireproofing.
  - 4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
  - 5. For materials failing tests, obtain applied-fireproofing manufacturer's written instructions for corrective measures including the use of specially formulated bonding agents or primers.

## **1.8 FIELD CONDITIONS**

- A. Environmental Limitations: Do not apply fireproofing when ambient or substrate temperature is 40 deg F 4.4 deg C or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours prior to, during, and for 24 hours after product application.
- B. Ventilation: Ventilate building spaces during and after application of fireproofing, providing a minimum 4 complete air exchanges per hour and according to manufacturer's written instructions until Spray-Applied Fire Resistive Materials are dried and cured. Use natural means or, if they are inadequate, forced-air circulation until fireproofing dries thoroughly.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Assemblies: Provide fireproofing, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.
- B. Source Limitations: Obtain fireproofing from single source.
- C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E 119/UL 263 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Steel members are to be considered unrestrained unless specifically noted otherwise.
- D. VOC Content: Products shall comply with VOC content limits of authorities having jurisdiction.
- E. Low-Emitting Materials: Fireproofing used within the weatherproofing system 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."
- F. Asbestos: Provide products containing no detectable asbestos.
- G. Products shall possess DECLARE Label
  - 1. Declaration Status "LBC Red List Free"

### 2.2 SPRAY-APPLIED FIRE RESISTIVE MATERIALS

- A. SFRM: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design and mixed with water at Project site to form a slurry or mortar before conveyance and application or conveyed in a dry state and mixed with atomized water at place of application.
- B. Products: Subject to compliance with requirements, provide one of the following:
  - 1. Concealed/Commercial SFRMs:
    - a. ISOLATEK International: CAFCO® 300 Series (ISOLATEK® Type 300 Series), CAFCO® BLAZE-SHIELD® II (ISOLATEK® Type II)
    - b. Physical Properties:
      - 1) Bond Strength: Minimum 150-lbf/sq. ft. (7.18-kPa) cohesive and adhesive strength based on field testing according to ASTM E 736.
      - 2) Density: Not less than 15 lb/cu. ft. (240 kg/cu. m) as specified in the approved fire-resistance design, according to ASTM E 605.
      - 3) Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design.
      - 4) Combustion Characteristics: When tested in accordance with ASTM E 136 shall be noncombustible.
      - 5) Surface-Burning Characteristics: When tested in accordance with ASTM E84 or CAN4-S102, the material shall exhibit the following surface burning characteristics:
        - a) Flame Spread Index [10] or less
        - b) Smoke Developed [10] or less

- 6) Compressive Strength: When tested in accordance with ASTM E761, the material shall not deform more than 10 percent when subjected to a crushing force of 1,440 psf (68.9 kPa).
- 7) Corrosion Resistance: No evidence of corrosion according to ASTM E 937.
- 8) Deflection: No cracking, spalling, or delamination according to ASTM E 759.
- 9) Effect of Impact on Bonding: No cracking, spalling, or delamination according to ASTM E 760.
- 10) Air Erosion: Maximum weight loss of 0.025 g/sq. ft. (0.270 g/sq. m) in 24 hours according to ASTM E 859.
- 11) Fungal Resistance: When tested in accordance with ASTM G21, the material shall show resistance to mold growth for a minimum period of 28

## 2.3 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that are compatible with fireproofing and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.
- B. Substrate Primers: Primers approved by fireproofing manufacturer and complying with one or both of the following requirements:
  1. Fireproofing manufacturer shall be contacted for procedures on handling primed/painted steel.
  2. Primer's bond strength in required fire-resistance design complies with specified bond strength for fireproofing and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E 736.
- C. Bonding Agent: Product approved by fireproofing manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.
- D. Metal Lath: Expanded metal lath fabricated from material of weight, configuration, and finish required, according to fire-resistance designs indicated and fireproofing manufacturer's written recommendations. Include clips, lathing accessories, corner beads, and other anchorage devices required to attach lath to substrates and to receive fireproofing.
- E. Reinforcing Fabric: Glass or carbon fiber fabric of type, weight, and form required to comply with fire-resistance designs indicated; approved and provided by fireproofing manufacturer.
- F. Reinforcing Mesh: Metallic mesh reinforcement of type, weight, and form required to comply with fire-resistance design indicated; approved and provided by fireproofing manufacturer. Include pins and attachment.
- G. Sealer: If required, a transparent-drying, water-dispersible, tinted protective coating as recommended by fireproofing manufacturer.
  1. Product: Subject to compliance with requirements, provide CAFCO® BOND-SEAL (ISOLATEK® Type EBS) or CAFCO® BOND-SEAL Type X (ISOLATEK® Type X) by ISOLATEK International.
- H. Topcoat: If required, a topcoat suitable for application over applied fireproofing; of type recommended by fireproofing manufacturer.

1. Cement-Based Topcoat: Factory-mixed, cementitious hard-coat formulation for trowel or spray application over SFRM.
  - a. Product: Subject to compliance with requirements, provide CAFCO® FENDOLITE® M-II (ISOLATEK® Type M-II), CAFCO® FENDOLITE® TG (ISOLATEK® Type TG) by ISOLATEK International.
2. Water-Based Permeable Topcoat: Factory-mixed formulation for brush, roller, or spray application over applied SFRM. Provide application at a rate of [30 sq. ft./gal. (0.75 sq. m/L)] [60 sq. ft./gal. (1.5 sq. m/L)] [120 sq. ft./gal. (3 sq. m/L)].
  - a. Product: Subject to compliance with requirements, provide CAFCO® TOP-COTE (ISOLATEK® Type TOP-COTE) by ISOLATEK International.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design. Verify compliance with the following:
  1. Substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fireproofing with substrates under conditions of normal use or fire exposure.
  2. Clips, hangers, supports, sleeves and other attachments to the substrate are to be placed by others prior to the application of the fireproofing materials.
  3. The installation of ducts, piping, conduit or other suspended equipment shall not take place until the application of the fireproofing is complete in an area.
- B. Fire protection shall not be applied to steel floor decks prior to the completion of concrete work on that deck.
- C. The application of fireproofing to the underside of roof deck shall not commence until the roof is completely installed and tight, all penthouses are complete, all mechanical units have been placed, and construction roof traffic has ceased. When roof traffic is anticipated, as in the case of periodic maintenance, roofing pavers shall be installed as a walkway to distribute loads.
- D. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application.
- B. Clean substrates of substances that could impair bond of fireproofing.

- C. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fireproofing. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

### **3.3 APPLICATION**

- A. Construct fireproofing assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fireproofing work.
- B. Comply with fireproofing manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fireproofing as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- C. Coordinate application of fireproofing with other construction to minimize need to cut or remove fireproofing.
  - 1. Do not begin applying fireproofing until clips, hangers, supports, sleeves, and other items penetrating fireproofing are in place.
  - 2. Defer installing ducts, piping, and other items that would interfere with applying fireproofing until application of fireproofing is completed.
- D. Metal Decks:
  - 1. Do not apply fireproofing to underside of metal deck substrates until concrete topping, if any, has been completed.
  - 2. Do not apply fireproofing to underside of metal roof deck until roofing has been completed; prohibit roof traffic during application and drying of fireproofing.
  - 3. When roof traffic is anticipated, as in the case of periodic maintenance, roofing pavers shall be installed as a walkway to distribute loads.
- E. Install auxiliary materials as required, as detailed, and according to fire-resistance design and fireproofing manufacturer's written recommendations for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by fireproofing manufacturer.
- F. Spray apply fireproofing to maximum extent possible. Following the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by fireproofing manufacturer.
- G. Extend fireproofing in full thickness over entire area of each substrate to be protected.
- H. Install body of fireproofing in a single course unless otherwise recommended in writing by fireproofing manufacturer.
- I. For applications over encapsulant materials, including lockdown (post-removal) encapsulants, apply fireproofing that differs in color from that of encapsulant over which it is applied.
- J. Where sealers are used, apply products that are tinted to differentiate them from fireproofing over which they are applied.
- K. Provide a uniform finish complying with description indicated for each type of fireproofing material and matching finish approved for required mockups.

- L. Cure fireproofing according to fireproofing manufacturer's written recommendations.
- M. Do not install enclosing or concealing construction until after fireproofing has been applied, inspected, and tested and corrections have been made to deficient applications.
- N. Finishes: Where indicated, apply fireproofing to produce the following finishes:
  - 1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.
  - 2. Spray-Textured Finish: Finish left as spray-applied with no further treatment.
  - 3. Rolled, Spray-Textured Finish: Even finish produced by rolling spray-applied finish with a damp paint roller to remove drippings and excessive roughness.
  - 4. Skip-Troweled Finish: Even leveled surface produced by troweling spray-applied finish to smooth out the texture and neaten edges.
  - 5. Skip-Troweled Finish with Corner Beads: Even, leveled surface produced by troweling spray-applied finish to smooth out the texture, eliminate surface markings, and square off edges.

### 3.4 **FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Test and inspect as required by Chapter 17 of the IBC.
  - 2. For reference, utilize AWCI - Inspection Procedure for Field-Applied Sprayed Fire-Resistive Materials, Technical Manual 12-A; an annotated guide.
- B. Test and inspect completed work in successive stages. Do not proceed with application of fireproofing for the next area until test results for previously completed applications of fireproofing show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- C. Application will be considered defective if it does not pass tests and inspections.
  - 1. Remove and replace fireproofing that does not pass tests and inspections, and retest.
  - 2. Apply additional fireproofing, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.
- D. Prepare test and inspection reports.

### 3.5 **CLEANING, PROTECTING, AND REPAIRING**

- A. Cleaning: Immediately after completing spraying operations in each containable area of project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.
- B. Protect fireproofing, according to advice of manufacturer and installer, from damage resulting from construction operations or other causes, so fireproofing will be without damage or deterioration at time of Substantial Completion.



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- C. As installation of other construction proceeds, inspect fireproofing and repair damaged areas and fireproofing removed due to work of other trades.
- D. Repair fireproofing damaged by other work before concealing it with other construction.
- E. Repair fireproofing by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

**END OF SECTION 078100.19**

**SECTION 078413**

**PENETRATION FIRESTOPPING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Penetration firestopping systems for the following applications:
    - a. Penetrations in fire-resistance-rated walls.
    - b. Penetrations in horizontal assemblies.
- B. Related Requirements:
  - 1. Section 078443 "Joint Firestopping" for joints in or between fire-resistance-rated construction, at exterior curtain-wall/floor intersections.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

**1.5 CLOSEOUT SUBMITTALS**

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

**1.6 QUALITY ASSURANCE**

**1.7 PROJECT CONDITIONS**

- A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

**1.8 COORDINATION**

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.

## **PART 2 - PRODUCTS**

### **2.1 PENETRATION FIRESTOPPING SYSTEMS**

- A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. 3M Fire Protection Products.
    - b. Hilti, Inc.
    - c. Tremco, Inc.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
1. F Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
- D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.
- E. Manufactured Piping Penetration Firestopping System: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. ProVent Systems, Inc.
  2. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
  3. Sleeve: Molded-PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.
  4. Stack Fitting: ASTM A48/A48M, gray-iron, hubless-pattern wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.
  5. Special Coating: Corrosion resistant on interior of fittings.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.
1. Permanent forming/damming/backing materials.
  2. Substrate primers.
  3. Collars.
  4. Steel sleeves.

## **2.2 FILL MATERIALS**

- A. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- B. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- C. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.
- D. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- E. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- F. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
- G. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- H. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- I. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

## **2.3 MIXING**

- A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:
  - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.
  - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
  - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

### **3.3 INSTALLATION**

- A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.
- B. Install forming 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.
  - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- C. Install fill materials by proven techniques to produce the following results:
  - 1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
  - 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 the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

### **3.4 IDENTIFICATION**

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches high and with minimum 0.375-inch strokes.
  - 1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet from end of wall and at intervals not exceeding 30 feet.

### **3.5 FIELD QUALITY CONTROL**

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2174.

### **3.6 CLEANING AND PROTECTION**

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

### **3.7 PENETRATION FIRESTOPPING SYSTEM SCHEDULE**

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.
- B. Penetration Firestopping Systems with No Penetrating Items.
  - 1. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.
- C. Penetration Firestopping Systems for Metallic Pipes, Conduit, or Tubing:
  - 1. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.
- D. Penetration Firestopping Systems for Nonmetallic Pipe, Conduit, or Tubing:
- E. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.
- F. Penetration Firestopping Systems for Electrical Cables:
  - 1. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.

- G. Penetration Firestopping Systems for Cable Trays with Electric Cables:
  - 1. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.
- H. Penetration Firestopping Systems for Insulated Pipes:
  - 1. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.
- I. Penetration Firestopping Systems for Miscellaneous Electrical Penetrants:
  - 1. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.
- J. Penetration Firestopping Systems for Miscellaneous Mechanical Penetrants :
  - 1. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.
- K. Penetration Firestopping Systems for Groupings of Penetrants>:
  - 1. F-Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction penetrated.

**END OF SECTION 078413**

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**SECTION 078443**

**JOINT FIRESTOPPING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Joints in or between fire-resistance-rated constructions.
  - 2. Joints at exterior curtain-wall/floor intersections.
- B. Related Requirements:
  - 1. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers and for wall identification.
  - 2. Section 079513.13 "Interior Expansion Joint Cover Assemblies" for fire-resistive manufactured expansion-joint cover assemblies for interior floors, walls, and ceilings.
  - 3. Section 079513.16 "Exterior Expansion Joint Cover Assemblies" for fire-resistive manufactured expansion-joint cover assemblies for exterior building walls, soffits, and parapets.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. .
- B. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each joint firestopping system, for tests performed by a qualified testing agency.

**1.5 CLOSEOUT SUBMITTALS**

- A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

**1.6 PROJECT CONDITIONS**

- A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.



## 1.7 COORDINATION

- A. Coordinate construction of joints to ensure that joint firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of joints to accommodate joint firestopping systems.

## PART 2 - PRODUCTS

### 2.1 JOINT FIRESTOPPING SYSTEMS

- A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. 3M Fire Protection Products.
    - b. Thermafiber, Inc.; an Owens Corning company.
    - c. Tremco, Inc.
  - 2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- C. Joints at Exterior Curtain Wall. Floor Intersections: Provide joint firestopping systems with rating determined per ASTM E2307.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. 3M Fire Protection Products.
    - b. Thermafiber, Inc.; an Owens Corning company.
    - c. Tremco, Inc.
  - 2. F-Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.
- D. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.
- E. Accessories: Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Surface Cleaning: Before installing joint firestopping systems, clean joints immediately to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
  - 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
  - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
  - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

### **3.3 INSTALLATION**

- A. General: Install joint firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
  - 1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- C. Install elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:
  - 1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
  - 2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
  - 3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

### **3.4 FIELD QUALITY CONTROL**

- A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2393.
- B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.
- C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

### **3.5 CLEANING AND PROTECTION**

- A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or

deteriorated joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

### **3.6 JOINT FIRESTOPPING SYSTEM SCHEDULE**

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHBN.
- B. Floor to Floor, Joint Firestopping Systems
  - 1. Assembly Rating: 1 hour. As per the fire resistance rating of construction.
- C. Wall-to-Wall, Joint Firestopping Systems:
  - 1. Assembly Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction.
- D. Floor-to-Wall, Joint Firestopping Systems:
  - 1. Assembly Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction.
- E. Head-of-Wall, Fire-Resistive Joint Firestopping Systems:
  - 1. Assembly Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction.
- F. Bottom-of-Wall, Joint Firestopping Systems:
  - 1. Assembly Rating: 1 hour or 2 hours. As per the fire-resistance rating of construction.

**END OF SECTION 078443**

## SECTION 079200

### JOINT SEALANTS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Silicone joint sealants.
  - 2. Nonstaining silicone joint sealants.
  - 3. Urethane joint sealants.
  - 4. Mildew-resistant joint sealants.
  - 5. Butyl joint sealants.
  - 6. Latex joint sealants.
- B. Related Requirements:
  - 1. Section 079219 "Acoustical Joint Sealants" for sealing joints in sound-rated construction.
  - 2. Section 321373 "Concrete Paving Joint Sealants" for sealing joints in paved roads, parking lots, walkways, and curbing.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.
- B. Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - 3. Joint-sealant formulation.
  - 4. Joint-sealant color.

##### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:
  - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
  - 2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.

##### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

##### 1.6 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:

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1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

**1.7 WARRANTY**

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants 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.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
  1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
  2. Disintegration of joint substrates from causes exceeding design specifications.
  3. Mechanical damage caused by individuals, tools, or other outside agents.
  4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

**PART 2 - PRODUCTS**

**2.1 JOINT SEALANTS, GENERAL**

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As indicated by manufacturer's designations

**2.2 SILICONE JOINT SEALANTS**

- A. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. GE Construction Sealants; Momentive Performance Materials Inc.
    - b. Pecora Corporation.
    - c. Sherwin-Williams Company (The).
- B. Silicone, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Uses T and NT.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Pecora Corporation.
  - b. Sika Corporation; Joint Sealants.

### **2.3 NONSTAINING SILICONE JOINT SEALANTS**

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C1248.
- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Pecora Corporation.
  - b. Sika Corporation: Joint Sealants.

### **2.4 URETHANE JOINT SEALANTS**

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Pecora Corporation.
  - b. Sherwin-Williams Company (The).
  - c. Sika Corporation; Joint Sealants.

- B. Urethane, S, NS, 25, T, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Uses T and NT.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - a. BASF Corporation.

### **2.5 MILDEW-RESISTANT JOINT SEALANTS**

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. GE Construction Sealants; Momentive Performance Materials Inc.
  - b. The Dow Chemical Company.

## **2.6 BUTYL JOINT SEALANTS**

- A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Pecora Corporation.

## **2.7 LATEX JOINT SEALANTS**

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Sherwin-Williams Company (The).

## **2.8 JOINT-SEALANT BACKING**

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. BASF Corporation.
    - b. Construction Foam Products; a division of Nomaco, Inc.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) Type O (open-cell material) Type B (bicellular material with a surface skin) or any of the preceding types, as approved in writing by joint-sealant manufacturer for joint application indicated], and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

## **2.9 MISCELLANEOUS MATERIALS**

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
  - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  - 2. Clean porous joint substrate surfaces by brushing, grinding, 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 the following:
    - a. Concrete.
    - b. Masonry.
    - c. Unglazed surfaces of porcelain tile.
    - d. Exterior insulation and finish systems.
  - 3. Remove laitance and form-release agents from concrete.
  - 4. Clean nonporous joint substrate 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 the following:
    - a. Metal.
    - b. Glass.
    - c. Glazed surfaces of porcelain tile.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### **3.3 INSTALLATION OF JOINT SEALANTS**

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.



- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealant from surfaces adjacent to joints.
  - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

### **3.4 CLEANING**

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### **3.5 PROTECTION**

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

### **3.6 JOINT-SEALANT SCHEDULE**

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
  - 1. Joint Locations:
    - a. Control and expansion joints in cast-in-place concrete slabs.
    - b. Tile control and expansion joints.
    - c. Joints between brick and cast-in-place concrete slab.
  - 2. Joint Sealant: Urethane, M, P, 50, T, NT .
  - 3. Joint-Sealant Color: As indicated by manufacturer's designations.
- B. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
  - a. Construction joints in cast-in-place concrete.
  - b. Control and expansion joints in unit masonry.
  - c. Joints in exterior insulation and finish systems.
  - d. Joints between different materials listed above.
  - e. Perimeter joints between materials listed above and frames of doors and windows and louvers.
  - f. Other joints as indicated on Drawings.
2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
3. Joint-Sealant Color: As indicated by manufacturer's designations
- C. Joint-Sealant Application: Interior joints in horizontal traffic surfaces:
  1. Joint Locations:
    - a. Isolation joints in cast-in-place concrete slabs.
    - b. Control and expansion joints in tile flooring.
- D. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
  1. Joint Locations:
    - a. Control and expansion joints on exposed interior surfaces of exterior walls.
    - b. Tile control and expansion joints.
    - c. Vertical joints on exposed surfaces of unit masonry walls and partitions.
  2. Joint Sealant: Urethane, S, NS, 25, NT
  3. Joint-Sealant Color: As indicated by manufacturer's designations.
- E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
  1. Joint Locations:
    - a. Control joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
  2. Joint Sealant: Acrylic latex.
  3. Joint-Sealant Color: As indicated by manufacturer's designations.
- F. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
  1. Joint Locations:
    - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    - b. Tile control and expansion joints where indicated.
  2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT
  3. Joint-Sealant Color: As indicated by manufacturer's designations.
- G. Joint-Sealant Application: Concealed mastics.

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1. Joint Locations:
  - a. Aluminum thresholds.
  - b. Sill plates.
2. Joint Sealant: Butyl-rubber based
3. Joint-Sealant Color: As indicated by manufacturer's designations.

**END OF SECTION 079200**

**SECTION 079219**

**ACOUSTICAL JOINT SEALANTS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes acoustical joint sealants.
- B. Related Requirements:
  - 1. Section 079200 "Joint Sealants" for elastomeric, latex, and butyl-rubber-based joint sealants for nonacoustical applications.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each acoustical joint sealant.
- B. Acoustical-Joint-Sealant Schedule: Include the following information:
  - 1. Joint-sealant application, joint location, and designation.
  - 2. Joint-sealant manufacturer and product name.
  - 3. Joint-sealant formulation.
  - 4. Joint-sealant color.

**1.4 WARRANTY**

- A. Special Installer's Warranty: Installer agrees to repair or replace acoustical joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish acoustical joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Provide acoustical joint-sealant products that effectively reduce airborne sound transmission through perimeter joints and openings in building construction, as demonstrated by testing representative assemblies according to ASTM E90.

## **2.2 ACOUSTICAL JOINT SEALANTS**

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C834.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. GE Construction Sealants; Momentive Performance Materials Inc.
    - b. Pecora Corporation.
    - c. Tremco Incorporated.
  - 2. Colors of Exposed Acoustical Joint Sealants: As indicated by manufacturer's designations.
- B. Acoustical Sealant for Concealed Joints: Manufacturer's standard nonsag, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber acoustical sealant.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Pecora Corporation.

## **2.3 MISCELLANEOUS MATERIALS**

- A. Primer: Material recommended by acoustical-joint-sealant manufacturer where required for adhesion of sealant to joint substrates.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine joints indicated to receive acoustical joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing acoustical joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where recommended by acoustical-joint-sealant manufacturer. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or

by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

**3.3 INSTALLATION OF ACOUSTICAL JOINT SEALANTS**

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.
- B. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C919, ASTM C1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.
- C. Acoustical Ceiling Areas: Apply acoustical joint sealant at perimeter edge moldings of acoustical ceiling areas in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

**3.4 CLEANING**

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of acoustical joint sealants and of products in which joints occur.

**3.5 PROTECTION**

- A. Protect acoustical joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated acoustical joint sealants immediately so installations with repaired areas are indistinguishable from original work.

**END OF SECTION 079219**

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**SECTION 079513.13**

**INTERIOR EXPANSION JOINT COVER ASSEMBLIES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes interior expansion joint cover assemblies.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for expansion joint cover assemblies.
- B. Shop Drawings: For each expansion joint cover assembly.
  - 1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams showing entire route of each expansion joint.
  - 2. Where expansion joint cover assemblies change planes, provide isometric or clearly detailed drawing depicting how components interconnect.
- C. Expansion Joint Cover Assembly Schedule: Prepared by or under the supervision of the supplier. Include the following information in tabular form:
  - 1. Manufacturer and model number for each expansion joint cover assembly.
  - 2. Expansion joint cover assembly location cross-referenced to Drawings.
  - 3. Nominal, minimum, and maximum joint width.
  - 4. Movement direction.
  - 5. Materials, colors, and finishes.
  - 6. Product options.
  - 7. Fire-resistance ratings.

**PART 2 - PRODUCTS**

**2.1 ASSEMBLY DESCRIPTION**

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.

**2.2 PERFORMANCE REQUIREMENTS**

- A. Fire-Resistance Ratings: Provide expansion joint cover assemblies with fire barriers identical to those of systems tested for fire resistance according to UL 2079 by a qualified testing agency.



### 2.3 FLOOR EXPANSION JOINT COVERS

- A. Center-Plate Floor Joint Cover. Assembly consisting of center plate that slides over metal frames fixed to sides of joint gaps.
  - a. BASF Corp. - Watson Bowman Acme Corp.
  - b. Inpro Corporation.
  - 2. Application: Floor to floor, or Floor to wall.
  - 3. Installation: Surface mounted.
  - 4. Load Capacity:
    - a. Uniform Load: 50 lb/sq. ft.
    - b. Concentrated Load: 300 lb
    - c. Maximum Deflection: 0.0625 inch.
  - 5. Fire-Resistance Rating: Not less than that of adjacent construction.
  - 6. Cover-Plate Design: Plain.
  - 7. Exposed Metal:
    - a. Aluminum: Mill Finish.

### 2.4 MATERIALS

- A. Aluminum: ASTM B221, Alloy 6063-T5 for extrusions; ASTM B209, Alloy 6061-T6 for sheet and plate.
  - 1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
- B. Elastomeric Seals: Manufacturer's standard preformed elastomeric membranes or extrusions to be installed in metal frames.
- C. Fire Barriers: Any material or material combination, when fire tested after cycling, designated to resist the passage of flame and hot gases through a movement joint and to comply with performance criteria for required fire-resistance rating.
- D. Moisture Barrier: Manufacturer's standard, flexible elastomeric material.
- E. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

### 2.5 ALUMINUM FINISHES

- A. Mill finish.

### 2.6 ACCESSORIES

- A. Moisture Barriers: Manufacturer's standard continuous, waterproof membrane within joint and attached to substrate on sides of joint.
  - 1. Provide where indicated on Drawings.
- B. Manufacturer's standard attachment devices. Include anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine surfaces where expansion joint cover assemblies will be installed for installation tolerances and other conditions affecting performance of the Work.
- B. Notify Architect where discrepancies occur that will affect proper expansion joint cover assembly installation and performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.

### **3.3 INSTALLATION**

- A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- B. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
  - 1. Repair or grout block out as required for continuous frame support using nonmetallic, shrinkage-resistant grout.
  - 2. Install frames in continuous contact with adjacent surfaces.
    - a. Shimming is not permitted.
  - 3. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
  - 4. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.
  - 5. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
  - 6. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.
- C. Seals: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.
  - 1. Provide in continuous lengths for straight sections.
  - 2. Seal transitions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
  - 3. Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
- D. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.

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- E. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.
- F. Fire-Resistance-Rated Assemblies: Coordinate installation of expansion joint cover assembly materials and associated work so complete assemblies comply with performance requirements.
  - 1. Fire Barriers: Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and field splices.
- G. Moisture Barrier Drainage: If indicated, provide drainage fittings and connect to drains.

**3.4 PROTECTION**

- A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
- B. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over expansion joint cover assemblies. Reinstall cover plates or seals prior to Substantial Completion.

**END OF SECTION 079513.13**

# 935 Series

Fire Barrier System

Floors and Walls - Textiled wool & Sealant



**Movement Rating ±50%**

## Product Guide



Thermal



Exterior



Interior



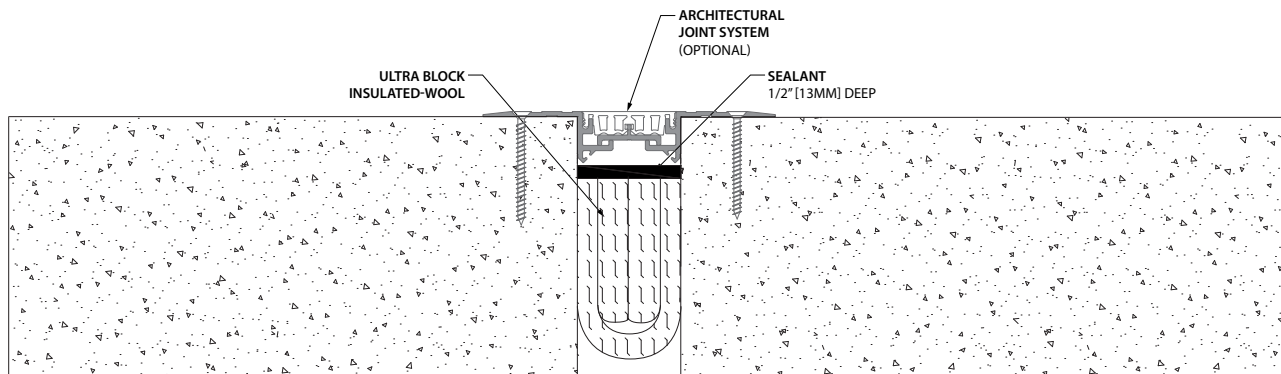
Fire Rated  
Option



Vapor Barrier  
Option

- ▶ Economical system for joint widths up to 5" [127mm]
- ▶ Offers greater movement than mineral wool and sealant fire barrier systems
- ▶ Fire barrier system is compliant with ASTM E119 and UL 2079
- ▶ The unique design of the 935 fire barrier allows for an easy installation, high resiliency and a uniform fill across the joint opening
- ▶ Fire resistant sealant stops smoke migration through the joint opening
- ▶ Available in 2,3 or 4 hour fire ratings, fire rating dependant on depth of material and width of joint opening
- ▶ Sealant provided in 20 oz [591ml] tubes and 5 US gallon [18.92l] pails

Application	System	Joint Width		Fire Rating	Movement %
		US	mm	Hours	
All Conditions	935-025	1"	25	2, 3, 4 hr.	50%
	935-050	2"	51	2,3,4 hr.	50%
	935-075	3"	76	2,3,4 hr.	50%
	935-100	4"	102	2 hr & 3 hr	50%
	935-125	5"	127	2 hr & 3 hr	25%

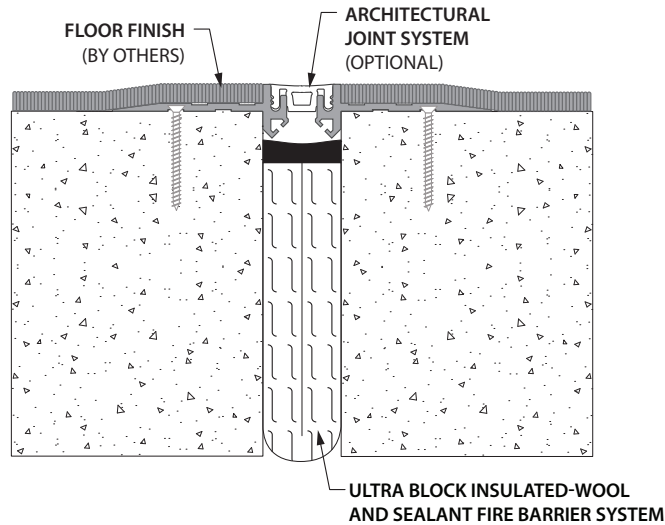


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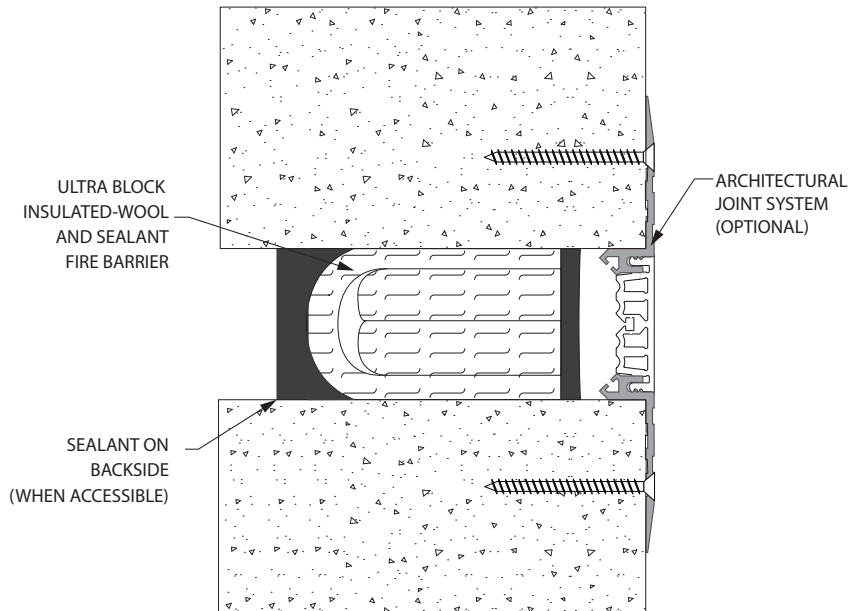
# 935 Series

## Fire Barrier System

### Ultra Block Wool & Sealant Fire Barrier System (1" (25mm) floor system shown)



### Ultra Block Wool & Sealant Fire Barrier System (2" (50mm) wall system shown)



Applications	Coverage: Installed 1/2" thick (13mm)	Joint Width: 1" (25mm)		Joint Width: 2" (50mm)		Joint Width: 3" (75mm)		Joint Width: 4" (100mm)		Joint Width: 5" (125mm)	
		LF	LM	LF	LM	LF	LM	LF	LM	LF	LM
Floor Conditions	20 oz. [591ml] Cartridge	5	1.5	3	.91	2	.61	1	.30	.5	.15
	5 US Gallon Pail	192.5	58.7	96.3	29.4	64.2	19.6	48.1	14.7	38.5	11.7
Wall Conditions	20 oz. [591ml] Cartridge	2.5	.76	1.5	.46	1	.30	.5	.15	.25	.08
	5 US Gallon Pail	96.3	29.3	48.1	14.6	32.1	9.78	24.1	7.34	19.3	5.9

**SECTION 079513.16**

**EXTERIOR EXPANSION JOINT COVER ASSEMBLIES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
1. Exterior expansion joint covers.

**1.2 ACTION SUBMITTALS**

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for expansion joint cover assemblies.
1. Exterior expansion joint covers.
- B. Shop Drawings: For each expansion joint cover assembly.
1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams showing entire route of each expansion joint.
  2. Where expansion joint cover assemblies change planes, provide isometric or clearly detailed drawing depicting how components interconnect.
- C. Samples: For each exposed expansion joint cover assembly and for each color and texture specified, full width by 6 inches long in size.
- D. Samples for Initial Selection: For each type of exposed finish.
1. Include manufacturer's color charts showing the full range of colors and finishes available for each exposed metal and elastomeric seal material.
- E. Samples for Verification: For each type of expansion joint cover assembly, full width by 6 inches long in size.
- F. Expansion Joint Cover Assembly Schedule: Prepared by or under the supervision of the supplier. Include the following information in tabular form:
1. Manufacturer and model number for each expansion joint cover assembly.
  2. Expansion joint cover assembly location cross-referenced to Drawings.
  3. Nominal, minimum, and maximum joint width.
  4. Movement direction.
  5. Materials, colors, and finishes.
  6. Product options.
  7. Fire-resistance ratings.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Product Test Reports: For each fire-resistance-rated expansion joint cover assembly, for tests performed by a qualified testing agency.

## **PART 2 - PRODUCTS**

### **2.1 ASSEMBLY DESCRIPTION**

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.

### **2.2 PERFORMANCE REQUIREMENTS**

- A. Seismic Performance: Expansion joint cover assemblies shall withstand the effects of earthquake motions determined according to [ASCE/SEI 7] <Insert requirement>.
- B. Fire-Resistance Ratings: Provide expansion joint cover assemblies with fire barriers identical to those of systems tested for fire resistance according to [UL 2079] [or] [ASTM E1966] by a qualified testing agency.
  - 1. Hose Stream Test: Wall-to-wall and wall-to-soffit assemblies shall be subjected to hose stream testing.

### **2.3 EXTERIOR EXPANSION JOINT COVERS**

- A. Exterior Elastomeric-Seal Joint Cover <Insert drawing designation>: Assembly consisting of elastomeric seal anchored to surface-mounted frames fixed to sides of joint gap.
  - 1. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
    - a. Johns Mansville.
  - 2. Application: Roof to roof.
  - 3. Installation: Surface-mounted
  - 4. Fire-Resistance Rating: Not less than 2 hours.
  - 5. Exposed Metal:
    - a. Aluminum: Mill.
  - 6. Seal: Preformed elastomeric membrane or extrusion.
    - a. Color: Black.

### **2.4 MATERIALS**

- A. Aluminum: ASTM B221, Alloy 6063-T5 for extrusions; ASTM B209, Alloy 6061-T6 for sheet and plate.
  - 1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
- B. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304 for plates, sheet, and strips.
- C. Brass: ASTM B36/B36M, UNS Alloy C26000 for half hard sheet and coil.

- D. Bronze: ASTM B455, Alloy C38500 for extrusions; Alloy C23000 red brass for plates.
- E. Elastomeric Seals: Manufacturer's standard preformed elastomeric membranes or extrusions to be installed in metal frames.
- F. Fire Barriers: Any material or material combination, when fire tested after cycling, designated to resist the passage of flame and hot gases through a movement joint and to comply with performance criteria for required fire-resistance rating.
- G. Moisture Barrier: Manufacturer's standard, flexible elastomeric material.

## **2.5 ALUMINUM FINISHES**

- A. Mill finish.
- B. Clear Anodic Finish: AAMA 611, [AA-M12C22A41, Class I, 0.018 mm] [AA-M12C22A31, Class II, 0.010 mm] or thicker.
- C. Color Anodic Finish: AAMA 611, [AA-M12C22A42/A44, Class I, 0.018 mm] [AA-M12C22A32/A34, Class II, 0.010 mm] or thicker.

## **2.6 STAINLESS STEEL FINISHES**

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
  - 1. Run grain of directional finishes with long dimension of each piece.
  - 2. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
  - 3. Directional Satin Finish: No. 4.
- C. Bright, Cold-Rolled, Unpolished Finish: No. 2B.

## **2.7 COPPER-ALLOY FINISHES**

- A. Buffed Finish: M21 (Mechanical Finish: buffed, smooth specular).
- B. Medium-Satin Finish: M32 (Mechanical Finish: directionally textured, medium satin).

## **2.8 ACCESSORIES**

- A. Moisture Barriers: Manufacturer's standard continuous, waterproof membrane within joint and attached to substrate on sides of joint.
  - 1. Provide where indicated on Drawings.
- B. Manufacturer's **[standard] [stainless steel]** attachment devices. Include anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine surfaces where expansion joint cover assemblies will be installed for installation tolerances and other conditions affecting performance of the Work.



- B. Notify Architect where discrepancies occur that will affect proper expansion joint cover assembly installation and performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.

### **3.3 INSTALLATION**

- A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- B. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
  - 1. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
  - 2. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.
  - 3. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
  - 4. Install frames in continuous contact with adjacent surfaces.
    - a. Shimming is not permitted.
  - 5. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.
- C. Elastomeric Seals: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.
  - 1. Provide in continuous lengths for straight sections.
  - 2. Seal transitions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
  - 3. Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
- D. Preformed Foam Joint Seals: Install in compliance with manufacturer's written instructions. Install with minimum number of end joints.
  - 1. Install each length of seal immediately after removing protective wrapping.
  - 2. Firmly secure compressed joint seals to joint gap side to obtain full bond using exposed pressure-sensitive adhesive or field-applied adhesive as recommended by manufacturer.
  - 3. Do not pull or stretch material. Produce seal continuity at splices, ends, turns, and intersections of joints.
  - 4. For applications at low ambient temperatures, heat foam joint seal material in compliance with manufacturer's written instructions.
- E. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.

- F. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.
- G. Fire-Resistance-Rated Assemblies: Coordinate installation of expansion joint cover assembly materials and associated work so complete assemblies comply with performance requirements.
  - 1. Fire Barriers: Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and field splices.
- H. Moisture Barrier Drainage: If indicated, provide drainage fitting and connect to drains.

### **3.4 CONNECTIONS**

- A. Transition to Roof Expansion Joint Covers: Coordinate installation of exterior wall and soffit expansion joint covers with roof expansion joint covers specified in Section 077129 "Manufactured Roof Expansion Joints." Install factory-fabricated units at transition between exterior walls and soffits and roof expansion joint cover assemblies.

### **3.5 PROTECTION**

- A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
- B. Protect the installation from damage by work of other Sections.

**END OF SECTION 079513.16**

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### Features and Components

This partnership combines Expand-O-Flash or Expand-O-Gard by Johns Manville installed over Fireline 520®\* Fire Barrier. A fire barrier is a fire resistance material or structure consisting of multiple materials that is engineered, fabricated and certified to function as a fire barrier providing one-, two- or three-hour fire ratings.

**Barriers:** Horizontal joint openings from 2" to 32" (5.08 cm to 81.28 cm) with 25%, 50% and 100% movement.

Vertical joint openings from 2" to 27" (5.08 cm to 68.58 cm) with 25%, 50% and 100% movement.

Fire Barriers are available with one-, two- or three-hour fire ratings.

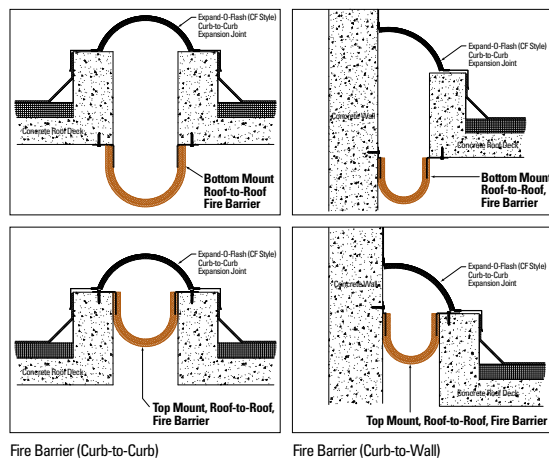
Factory made and ready to install out of the box, eliminating the need to miter or otherwise modify parts on site, reducing installation time.

Standard male/female joint system ensures fire barrier integrity at splices.

**Flange:** 2" wide expanded steel

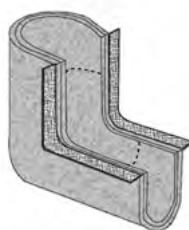
**Styles:** Top; Bottom; or Inside Mount

\* Manufactured in the U.S.A. by Fireline 520, Buffalo, New York



<b>Component</b>
<b>S</b> Specialty
Multi-Ply Single Ply
<b>Type</b>
<b>EJ</b> Joint Cover
<b>FB</b> Fire Barrier

### Horizontal and Vertical Transitions



- Factory-assembled directional changes with male/female connections
- Saves on installation time and labor
- Ensures fire-resistance rating is maintained.
- Can accommodate almost any angle.
- Essential for mating vertical and horizontal fire barriers for a complete system.

**System Compatibility** This product may be used as a component in the following systems. Please reference product application for specific installation methods and information.

Multi-Ply	BUR		APP		SBS			
	HA	CA	CA	HW	HA	CA	HW	SA
<b>Compatible with all Multi-Ply systems</b>								

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
<b>Compatible with all Single Ply systems</b>							

**Key:** HA = Hot Applied CA = Cold Applied HW = Heat Weldable SA = Self Adhered MF = Mechanically Fastened FA = Fully Adhered BA = Ballasted

### Energy and the Environment

Pre-Consumer Recycled Content	0%
Post-Consumer Recycled Content	0%

### Peak Advantage® Guarantee Information

Covered under the JM Peak Advantage Guarantee when installed in a JM approved roofing system.

### Codes and Approvals



- Listed by Warnock Hersey and Guardian Fire Testing Laboratories Inc.
- Meets UL® 2079, ASTM E 119, ASTM E 1399, ASTM E 1966 and ULC S-115.

Refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the Web at [www.jm.com/roofing](http://www.jm.com/roofing).

### Installation/Application

Refer to JM applicator guides or detail drawings for instructions.

### Packaging and Dimensions

Barrier Widths	Horizontal: 2" to 32" (5.08 cm to 81.28 cm) Vertical: 2" to 27" (5.08 cm to 68.58 cm)
Barrier Thickness	Varies
Flange Width	2" (5.08 cm)
Lengths*	Straight sections are 10 ft (3.05 m) standard
Producing Location	Buffalo, NY

\* Unique Fire Barrier sections are custom made in the factory and ready to install out of the box.

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**SECTION 081113**

**HOLLOW METAL DOORS AND FRAMES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:

1. Standard metal doors and frames.
2. Light frames and glazing installed in hollow metal doors.

- B. Related Sections:

1. Section 042200 "Concrete Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
- 2.
3. Section 087100 "Door Hardware".
4. Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" for field painting hollow metal doors and frames.

- C. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI/SDI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
2. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frames Anchors and Hardware Reinforcing.
3. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames.
4. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
5. ANSI/SDI A250.11 - Recommended Erection Instructions for Steel Frames.
6. ASTM A1008 - Standard Specification for Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
7. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
8. ASTM A924 - Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
9. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
10. ANSI/BHMA A156.115 - Hardware Preparation in Steel Doors and Frames.
11. ANSI/SDI 122 - Installation and Troubleshooting Guide for Standard Steel Doors and Frames.
12. ANSI/NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.
13. ANSI/NFPA 105: Standard for the Installation of Smoke Door Assemblies.
14. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; National Fire Protection Association.
15. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
16. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

### **1.3 SUBMITTALS**

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, hardware reinforcements, profiles, anchors, fire-resistance rating, and finishes.
- B. Door hardware supplier is to furnish templates, template reference number and/or physical hardware to the steel door and frame supplier in order to prepare the doors and frames to receive the finish hardware items.
- C. Shop Drawings: Include the following:
  - 1. Elevations of each door design.
  - 2. Details of doors, including vertical and horizontal edge details and metal thicknesses.
  - 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
  - 4. Locations of reinforcement and preparations for hardware.
  - 5. Details of anchorages, joints, field splices, and connections.
  - 6. Details of accessories.
  - 7. Details of moldings, removable stops, and glazing.
  - 8. Details of conduit and preparations for power, signal, and control systems.
- D. Samples for Verification:
  - 1. Samples are only required by request of the architect and for manufacturers that are not current members of the Steel Door Institute.

### **1.4 QUALITY ASSURANCE**

- A. Source Limitations: Obtain hollow metal doors and frames through one source from a single manufacturer wherever possible.
- B. Quality Standard: In addition to requirements specified, furnish SDI-Certified manufacturer products that comply with ANSI/SDI A250.8, latest edition, "Recommended Specifications for Standard Steel Doors and Frames".
- C. 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 UL10C (neutral pressure at 40" above sill) or UL 10C.
  - 1. Temperature-Rise Limit: Where indicated and at vertical exit enclosures (stairwell openings) and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.
  - 2. Smoke Control Door Assemblies: Comply with NFPA 105.
    - a. Smoke "S" Label: Doors to bear "S" label, and include smoke and draft control gasketing applied to frame and on meeting stiles of pair doors.

### **1.5 PREINSTALLATION MEETINGS**

- A. Pre-Installation Conference: Conduct conference at Project site. Attendance by representatives of Supplier, Installer, and Contractor to review proper methods and procedures for installing hollow metal doors and frames and to verify installation of electrical knockout boxes and conduit at frames with electrified or access control hardware.

### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project site storage. Do not use non-vented plastic.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

- C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
  - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation. Door and frames to be stacked in a vertical upright position.

#### **1.7 PROJECT CONDITIONS**

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

#### **1.8 COORDINATION**

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

#### **1.9 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
- B. Warranty includes installation and finishing that may be required due to repair or replacement of defective doors.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide steel doors and frames from a SDI Certified manufacturer:
  - 1. CECO Door Products (C).
  - 2. Curries Company (CU).
  - 3. Pioneer Industries (PI).
  - 4. Republic Doors and Frames (R).
  - 5. Steelcraft (S).

#### **2.2 MATERIALS**

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 metallic coating.
- C. Frame Anchors: ASTM A 653/A 653M, Commercial Steel (CS), Commercial Steel (CS), Type B; with minimum G60 metallic coating.

#### **2.3 HOLLOW METAL DOORS**

- A. General: Provide 1-3/4 inch doors of design indicated, not less than thickness indicated; fabricated with smooth surfaces, without visible joints or seams on exposed faces unless otherwise indicated. Comply with ANSI/SDI A250.8 and ANSI/NAAMM HMMA 867.
- B. Exterior Doors (Energy Efficient): Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A924 A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model, ANSI/SDI A250.4 for physical performance level, and HMMA 867 for door construction.
  - 1. Design: Flush panel.
  - 2. Core Construction: Foamed in place polyurethane and steel stiffened laminated core with no stiffener face welds, in compliance with HMMA 867 "Laminated Core".



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- a. Provide 22 gauge steel stiffeners at 6 inches on-center internally welded at 5" on-center to integral core assembly, foamed in place polyurethane core chemically bonded to all interior surfaces. No stiffener face welding is permitted.
  - b. Thermal properties to rate at a fully operable minimum U-Factor 0.37 and R-Value 2.7, including insulated door, thermal-break frame and threshold.
  - c. Kerf Type Frames: Thermal properties to rate at a fully operable minimum U-Factor 0.38 and R-Value 2.6, including insulated door, kerf type frame, and threshold.
3. Level/Model: Level 3 and Physical Performance Level A (Extra Heavy Duty), Minimum 16 gauge (0.053 inch - 1.3-mm) thick steel, Model 2.
  4. Vertical Edges: Vertical edges to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches.
  5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
  6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".
  7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- C. Exterior Doors: Face sheets fabricated of commercial quality hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Design: Flush panel.
  2. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
  3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
  4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
  5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- D. Interior Doors (Energy Efficient): Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A366 or 620. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Design: Flush panel.
  2. Core Construction: Steel stiffened laminated core with fiberglass filler with no stiffener face welds, in compliance with HMMA 867 "Laminated Core".
    - a. Provide 22 gauge steel-stiffeners at 6 inches on-center internally welded at 5" on-center to integral core assembly, No stiffener face welding is permitted.
    - b. Acoustical sound transmission rating shall be no less than STC 38 complying with ASTM E 90 and must be visible on factory applied labels.
  3. Level/Model: Level 2 and Physical Performance Level A (Heavy Duty), Minimum 18 gauge (0.042 inch - 1.1-mm) thick steel, Model 2.

4. Vertical Edges: Vertical edges-to be mechanically interlocked with hairline seam. Beveled Lock Edge, 1/8 inch in 2 inches.
  5. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet. Doors with an inverted top channel to include a steel closure channel, screw attached, with the web of the channel flush with the face sheets of the door. Plastic or composite channel fillers are not acceptable.
  6. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9".
  7. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- E. Interior Doors: Face sheets fabricated of commercial quality cold rolled steel that complies with ASTM A 1008/A 1008M. Provide doors complying with requirements indicated below by referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:
1. Design: Flush panel.
    - a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.
  2. Level/Model: Level 2 and Physical Performance Level B (Heavy Duty), Minimum 18 gauge (0.042-inch - 1.0-mm) thick steel, Model 2.
  3. Top and Bottom Edges: Reinforce tops and bottoms of doors with a continuous steel channel not less than 16 gauge, extending the full width of the door and welded to the face sheet.
  4. Hinge Reinforcement: Minimum 7 gauge (3/16") plate 1-1/4" x 9" or minimum 14 gauge continuous channel with pierced holes, drilled and tapped.
  5. Hardware Reinforcements: Fabricate according to ANSI/SDI A250.6 with reinforcing plates from same material as door face sheets.
- F. Manufacturers Basis of Design:
1. Curries Company (CU) - Polystyrene Core - 707 Series.
  2. Curries Company (CU) - Energy Efficient - 777 Trio-E Series.
  3. Republic Doors and Frames (R).
  4. Steelcraft (S).

## **2.4 HOLLOW METAL FRAMES**

- A. General: Comply with ANSI/SDI A250.8 and with details indicated for type and profile.
- B. Exterior Frames: Fabricated of hot-dipped zinc coated steel that complies with ASTM A 653/A 653M, Coating Designation A60.
1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.
  2. Manufacturers Basis of Design:
    - a. CECO Door Products (C) – SU SR Series.
    - b. Curries Company (CU) – M Series.
    - c. Republic Doors and Frames (R).
    - d. Steelcraft (S).
- C. Interior Frames: Fabricated from cold-rolled steel sheet that complies with ASTM A 1008/A 1008M.
1. Fabricate frames with mitered or coped corners. Profile as indicated on drawings.

2. Manufacturers Basis of Design:

- a. CECO Door Products (C) - DU Series.
  - b. CECO Door Products (C) - SU Series.
  - c. Curries Company (CU) - M Series.
  - d. Republic Doors and Frames (R).
  - e. Steelcraft (S).
- D. Fire rated frames: Fabricate frames in accordance with NFPA 80, listed and labeled by a qualified testing agency, for fire-protection ratings indicated.
- E. Hardware Reinforcement: Fabricate according to ANSI/SDI A250.6 Table 4 with reinforcement plates from same material as frames.

**2.5 FRAME ANCHORS**

- A. Jamb Anchors:
1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, formed from A60 metallic coated material, 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 and not less than 0.042 inch thick.
  3. Compression Type for Drywall Slip-on (Knock-Down) Frames: Adjustable compression anchors.
- B. Floor Anchors: Floor anchors to be provided at each jamb, formed from A60 metallic coated material, not less than 0.042 inches thick.
- C. Mortar Guards: Formed from same material as frames, not less than 0.016 inches thick.

**2.6 LIGHT OPENINGS AND GLAZING**

- A. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints at fabricator's shop. Fixed and removable stops to allow multiple glazed lites each to be removed independently. Coordinate frame rabbet widths between fixed and removable stops with the type of glazing and installation indicated.
- B. Moldings for Glazed Lites in Doors and Loose Stops for Glazed Lites in Frames: Minimum 20 gauge thick, fabricated from same material as door face sheet in which they are installed.
- C. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch high unless otherwise indicated. Provide fixed frame moldings and stops on outside of exterior and on secure side of interior doors and frames.
- D. Preformed Metal Frames for Light Openings: Manufacturer's standard frame formed of 0.048-inch-thick, cold rolled steel sheet; with baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated. Match pre-finished door paint color where applicable.

**2.7 ACCESSORIES**

- A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.
- B. Grout Guards: Formed from same material as frames, not less than 0.016 inches thick.

**2.8 FABRICATION**

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. When shipping limitations so dictate, frames for large openings are to be fabricated in sections for splicing or splining in the field by others.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in ANSI/SDI A250.8.

C. Hollow Metal Doors:

1. Exterior Doors: Provide optional weep-hole openings in bottom of exterior doors to permit moisture to escape where specified.
2. Glazed Lites: Factory cut openings in doors with applied trim or kits to fit. Factory install glazing where indicated.
3. Astragals: Provide overlapping astragals as noted in door hardware sets in Division 08 Section "Door Hardware" on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted.
4. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge strap for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".

D. Hollow Metal Frames:

1. Shipping Limitations: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
2. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
  - a. Welded frames are to be provided with two steel spreaders temporarily attached to the bottom of both jambs to serve as a brace during shipping and handling. Spreader bars are for bracing only and are not to be used to size the frame opening.
3. 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.
4. High Frequency Hinge Reinforcement: Provide high frequency hinge reinforcements at door openings 48-inches and wider with mortise butt type hinges at top hinge locations.
5. Continuous Hinge Reinforcement: Provide welded continuous 12 gauge straps for continuous hinges specified in hardware sets in Division 08 Section "Door Hardware".
6. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated for removable stops, provide security screws at exterior locations.
7. Mortar Guards: Provide guard boxes at back of hardware mortises in frames at all hinges and strike preps regardless of grouting requirements.
8. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
9. Jamb Anchors: Provide number and spacing of anchors as follows:
  - a. Masonry Type: 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 120 inches high.
    - 4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
  - b. Stud Wall Type: 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:

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- 1) Three anchors per jamb up to 60 inches high.
  - 2) Four anchors per jamb from 60 to 90 inches high.
  - 3) Five anchors per jamb from 90 to 96 inches high.
  - 4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
  - 5) Two anchors per head for frames above 42 inches wide and mounted in metal stud partitions.
10. Door Silencers: Except on weatherstripped or gasketed doors, drill stops to receive door silencers. Silencers to be supplied by frame manufacturer regardless if specified in Division 08 Section "Door Hardware".
11. Bituminous Coating: Where frames are fully grouted with an approved Portland Cement based grout or mortar, coat inside of frame throat with a water based bituminous or asphaltic emulsion coating to a minimum thickness of 3 mils DFT, tested in accordance with UL 10C and applied to the frame under a 3rd party independent follow-up service procedure.
- E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping 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 non-template, 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 Sections.

## **2.9 STEEL FINISHES**

- A. Prime Finishes: Doors and frames to be cleaned, and chemically treated to insure maximum finish paint adhesion. Surfaces of the door and frame exposed to view to receive a factory applied coat of rust inhibiting shop primer.
1. Shop Primer: Manufacturer's standard, fast-curing, lead and chromate free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; and compatible with substrate and field-applied coatings.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. General Contractor to verify the accuracy of dimensions given to the steel door and frame manufacturer for existing openings or existing frames (strike height, hinge spacing, hinge back set, etc.).
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Remove welded in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for square, level, twist, and plumb condition.

- C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."
- D. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

### **3.3 INSTALLATION**

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11 and NFPA 80 at fire rated openings.
  - 1. Set frames accurately in position, plumbed, leveled, aligned, and braced securely until permanent anchors are set. After wall construction is complete and frames properly set and secured, remove temporary braces, leaving surfaces smooth and undamaged. Shim as necessary to comply with installation tolerances.
  - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
  - 3. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with mortar.
  - 4. Grout Requirements: Do not grout head of frames unless reinforcing has been installed in head of frame. Do not grout vertical or horizontal closed mullion members.
- C. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
  - 1. Non-Fire-Rated Standard Steel Doors:
    - a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.
    - b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
    - c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
    - d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.
  - 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
- D. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing" and with hollow metal manufacturer's written instructions.

### **3.4 ADJUSTING AND CLEANING**

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat and Painted Finish Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat, or painted finishes, and apply touchup of compatible air drying, rust-inhibitive primer, zinc rich primer (exterior and galvanized openings) or finish paint.

**END OF SECTION 081113**

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**SECTION 081115**

**DETENTION HOLLOW METAL SLIDING DOORS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENT**

- A. Drawings and General provisions of Contract, including General & Supplementary conditions and Division 1 Specifications sections apply.

**1.2 SUMMARY**

- A. Section Includes.
  - 1. "Detention" grade hollow metal doors and frames.
  - 2. The work of this section is intended to be included with the work of Detention Hardware and shall be assigned to the single responsibility of the qualified Detention Equipment Subcontractor (DES).
  
- B. Related Sections
  - 1. Section 033000: Cast in Place Concrete.
  - 2. Section 042200: Concrete Unit Masonry.
  - 3. Section 042613: Masonry Veneer.
  - 4. Section 051200: Structural Steel.
  - 5. Section 061000: Rough Carpentry.
  - 6. Section 081113: Hollow Metal Doors and Frames.
  - 7. Section 081115.13: Detention Hollow Metal Doors.
  - 8. Section 087100: Door Hardware.
  - 9. Section 087173: Detention Door Hardware.
  - 10. Section 088000.13: Security Glazing.
  - 11. Section 099123: Interior Painting.
  - 12. Division 26: Electrical wiring.

**1.3 REFERENCES**

- A. Publications listed in this article form a part of this specification to the extent referenced. In case of conflict, the most restrictive requirements shall apply.
  
- B. American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103:
  - 1. ASTM A370-07a: Test Methods and Definition for Mechanical Testing of Steel Products.
  - 2. ASTM A569-98: Specification for Steel, Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip, Commercial Quality.
  - 3. ASTM 653/A653M-07: Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process [Metric].
  - 4. ASTM F 1233-98 (2004): Standard Test Method for Security Glazing Materials and Systems.
  - 5. ASTM F1450-05:



Standard Test methods for Hollow Metal Swinging Door Assemblies for Detention Facilities.

- C. National Association of Architectural Metal Manufacturers (NAAMM), 8 South Michigan Avenue, Chicago, IL 60603:
  - 1. HMMA 830-02:  
Hardware Preparation and Locations for Hollow Metal Doors and Frames.
  - 2. HMMA 840-99:  
Installation and Storage of Hollow Metal Doors and Frames.
  - 3. HMMA 850-00:  
Fire Rated Hollow Metal Doors and Frames, Second Edition.
  - 4. HMMA 863-04:  
Guide Specifications for Detention Security Hollow Metal Doors and Frames.
- D. Underwriters Laboratories, Inc. (UL), 333 Pfingsten Road, Northbrook, IL 60062:
  - 1. UL10C-1998:  
Fire Tests of Door Assemblies.
  - 2. UL 752-05:  
Bullet Resisting Equipment.
- E. Door and Hardware Institute (DHI):
  - 1. Recommended Procedure for Processing Hardware Schedules and Templates-96.
  - 2. Installation Guide for Doors and Hardware-84.
- F. American Welding Society.
  - 1. AWS D1.1 and D1.3, CSA W47.1-92 and RWMA, Resistance Welding Manual.

#### 1.4 DEFINITIONS

- A. HMMA: Hollow Metal Manufacturers Association.
- B. NAAMM: National Association of Architectural Metal Manufacturers.
- C. DHI: Door and Hardware Institute.
- D. AWS: American Welding Society.

#### 1.5 SUBMITTALS

- A. Submit in accordance with Division 1.
- B. Project Data.
  - 1. Submit manufacturer's material and fabrication specification and installation instructions modified to reflect project requirements and job conditions.
  - 2. Include instructions for handling, storage, and protection.
  - 3. Where applicable, provide instructions for installation in pre-cast and cast-in-place concrete.
  - 4. Include instructions for bracing of frames and frame tolerances.
- B. Shop Drawings
  - 1. Provide details of openings.
    - a. Include door and frame elevations and sections.
    - b. Indicate required anchorage and accessory items, field dimensions, and finishes.
    - c. Include plan (horizontal) section through frames and elevations.

- d. Show erection, construction, and other requirements not fully described by manufacturer's data.
  - e. Include a transverse and longitudinal section through the door showing construction and reinforcing.
  - f. Include details of hardware reinforcements, joints, connections, and light cut-outs.
  - g. Show proposed locations for Grout and Anchor Access Holes.
  2. Provide a schedule listing the openings with description, door locations, gauges, and anchors.
- C. Quality Assurance Submittals
1. Notarized statement from the Manufacturer attesting to conformance with the requirements, standards and testing required by this section.
  2. Reference list showing detention projects for which the manufacturer has supplied security hollow metal. Include dates of completion.
  3. Notarized statement from manufacturer attesting that they are a current member of NAAMM and will conform to the NAAMM standards for fabrication methods and product quality control.
  4. Mill Certification for materials used to fabricate specified items.
- D. Test reports:
1. Submit certified engineering reports from a nationally recognized independent testing laboratories showing that the results of the tests meet or exceed minimum specified performance requirements. Tested doors, frames, and other material shall be retained at the manufacturer's facility for possible future inspection.
  2. Include specifications and details of the construction of the tested assemblies.
    - a. The removable glazing stop test report shall include specification and samples of security screws. The manufacturer shall submit a letter certifying that screws used on this project match the screws tested.
    - b. The manufacturer shall submit a letter certifying that door assemblies used on this project match the assemblies tested in all respects.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications
1. Personnel and plant equipment capable of fabricating security hollow metal assemblies of the type specified.
  2. Meet the standards set by HMMA, a division of the NAAMM for fabrication methods and product quality control.
  3. Member of NAAMM and subject to quality performance requirements.
  4. Provide security hollow metal work manufactured by a single firm specializing in the production of detention hollow metal work. Provide doors and frames from the same manufacturer.
  5. Welders currently qualified under AWS B2.1 or certified under CSA W47.1-92 Classification 2.1 to perform the type of work required.
  6. At least 10 years of experience and 3 jobs of equal complexity which have been completed and occupied within the last 5 years. References shall include, but not be limited to the following:
    - a. Name and location of project, date of occupancy and contract value.
    - b. Name, address, and telephone numbers of the Owner's operations supervisor, Owner's maintenance supervisor, Owner, and General Contractor.
  7. Provide documentation of labeling ability as required on specified assemblies.

## 1.7 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping, Handling, and Unloading

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1. Carton, crate or palletize hollow metal doors, frames, and other items to provide protection in transit.
- B. Acceptance at Site
1. Conform to requirements of HMMA 840.
  2. Inspect for damage and shortages.
  3. Promptly repair minor damage. Clean and touch up with rust inhibitive primer or galvanizing repair paint as applicable.
- C. Storage and Protection
1. Conform to HMMA 840.
  2. Remove wrappings or coverings from doors and frames immediately upon delivery to the project site.
  3. Store materials in a dry covered area.
  4. Place materials on planking or blocking, at least 4" off of the ground, 2" off of a paved area or floor slab. Do not store flat.
  5. Store doors and frames in an upright position with heads upper most. Place no more than 5 single opening frames or 3 multi-opening frames in a group. Provide, by means of wood strips, a space of at least 1/4" between all units to permit air circulation.
  6. Do not use non-vented plastic or canvas shelters which could create a humidity chamber.

## 1.8 SCHEDULING

- A. Coordinate installation with related sections.
- B. Jamb face dimensions on drawings are nominal. Coordinate to provide jamb opening required to accommodate hardware. Coordinate incorporation of modified frame dimensions into wall construction.
- C. Where frames are located in precast walls, coordinate with precast manufacturer to ensure proper installation.

## 1.9 WARRANTY

- A. Door manufacturer is to warranty their products for a minimum of 2 (two) Years, from the date of substantial completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
1. Products of the following manufacturers will be acceptable provided they furnish the certifications and test reports necessary to document conformance with the requirements of this specification
    - a. Apex Industries Inc., Attn: Donny Gallant 1(800) 268-3331  
Website : [www.apexindustries.com](http://www.apexindustries.com)
    - b. US Security Systems, Inc., Attn: Joseph Ames (334)424-1823  
Website: [www.ussecuritysystems.com](http://www.ussecuritysystems.com)
    - c. To be Determined.
  2. Products of other manufactures will be considered for approval if they conform to the manufacturer's qualification shown in Part 1 and if information required under "quality assurance" is submitted at least ten days prior to bid due date.

## 2.2 TESTING AND PERFORMANCE

- A. ASTM F 1450.
  - 1. Certify to successful completion and conformance to the security grades and test load requirements for the specified security grade. Include the following tests.
    - a. Door assembly impact test.
    - b. Door static load test.
    - c. Door rack test.
    - d. Door assembly fire test (where door assemblies are specified or shown as fire rated).
    - e. Door assembly and hardware tool attack test (Testing of individual door and frame components is acceptable).
    - f. Door edge crush test.
  - 2. Provide door assemblies constructed the same as the test door assemblies.
    - a. Where door assembly cannot be certified as complying with ASTM 1450 because of additional specified requirements, provide proof of satisfactory completion of ASTM testing along with a certification from the manufacturer attesting that the assemblies are the same as the tested assemblies except for the modification.
- B. NAAMM
  - 1. Comply with ANSI/NAAMM HMMA 863-04 "Guide Specifications for Detention Security Hollow Metal Doors and Frames," except as otherwise indicated.
- C. Welding
  - 1. Comply with welding standards as define in AWS D1.1 and D1.3, CSA W47.1 and RWMA, Resistance Welding Manual.
  - 2. Welds shall have complete penetration and fusion.
  - 3. Remove parent metal when testing welds to failure.

## 2.3 SECURITY GRADES

- A. Conform to the security grade requirements of requirements of ASTM F 1450:
  - 1. Security grade 1: Minimum 12 gauge door face sheet and 12 gauge frame.

## 2.4 BASIC MATERIALS

- A. Steel fabrications:
  - 1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
- B. Galvanizing:
  - 1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames, HMMA 863".
  - 2. (G90) Mill phosphatize in addition to coating specified in HMMA 863.
  - 3. Galvanize (G90) or apply zinc coating to doors and frames in the following areas:
    - a. Interior doors and frames subject to corrosive conditions.
    - b. Other doors, frames, and components specified as galvanized.
- C. Supports, anchors, and fasteners:
  - 1. Supports and Anchors:
    - a. Manufacturer's standard except.
      - 1. Same material as frame including gage and galvanizing where indicated.
  - 2. Fasteners, Bolts, and Inserts.
    - a. Manufacturer's standard units except:

- 1) For exposed fasteners, provide Torx® security type.
  - b. Hot-dip galvanize in compliance with ASTM A 153, Class C or D as applicable.
3. Frame anchors
- a. Floor Anchors: Secure door jambs at floor.
  - b. Sill Anchors: Where indicated on drawings, provide 1/8" continuous bent plate channel set in sealant, with minimum 0.0394" diameter x 3" expansion bolt anchors at 16" on centers.
  - c. Jamb Anchors: Space at 16" on centers maximum in masonry.
  - d. Head Anchors: Provide loose "T" anchors spaced 16" on centers at heads of frames in masonry openings more than 48" wide.
    - 1) Fabricate head anchors of same gauge as frame, 2" wide, with 10" long leg of "T" punched to engage lintel reinforcement.
  - e. Completed Opening Frame Anchors: Provide expansion anchor Space anchors at same interval as specified for masonry frame anchors above unless otherwise indicated.
    - 1). Accepted Anchor Bolts, supplied and installed by frame installer:
      - a) Hilti Sleeve Anchor.
      - b) Ramset/Red Head Dynabolt Sleeve.
      - c) Rawl Lok/Bolt.
- D. Finish:
1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
  2. Treat surface to assure maximum paint adhesion.
  3. Coat inside and outside surfaces of the frame and outside surfaces of the door with a rust inhibitive primer.
- E. Back Coating:
1. Back Coat frames which are to be filled with grout or installed in concrete or masonry walls.
  2. Material: Water resistant bituminous coating.
  3. Back coating to be field applied.

## 2.5 HARDWARE PREPARATION

- A. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
- B. Concealed Hardware: Provide grout boxes to enclose item. Provide welded in mounting tabs to suit.
- C. Surface Applied Hardware: Drilling and tapping may be done at project site.
- D. Minimum gauges and sizes for hardware reinforcements:
  1. Mortise hinges and pivots:
    - a. Minimum 3/16" thick x 10" high.
    - b. Frame reinforcement: full width of the frame.
    - c. Weld minimum 12 gauge steel angle(s) at back of frame face and hinge reinforcement to resist deformation under swinging door load.
    - d. Provide additional reinforcement and bracing for top hinge by welding a 1" x 1" x 3/16" back-up angle to the inside of the frame.
  2. Surface applied security hinges: 1/4" plate.
  3. Locking device hanger attachments: per device manufacturer's template or installation instructions.
  4. Lock fronts and door reinforcement for closers: Minimum 12 gauge.

5. Internal reinforcements for surface applied hardware; Minimum 12 gauge. Reinforcement for door pulls shall be not less than 1 1/2" x 12".
6. Strike or keeper: Minimum 3/16". Weld at each of four sides to frame.
7. Frame reinforcement for closers: Minimum 1/8" x full width of the opening. This applies even where concealed closers are specified.
8. Flush bolt reinforcements: Minimum 3/16".
9. Frame mounted electric lock pockets: Minimum 1/8" steel back plate. or manufacturers standard 10 gauge, one-piece lock pocket meeting ASTM test requirements.

## 2.6 FRAMES

- A. Material thickness:
  1. As required by specified security grade.
- B. Design and Construction:
  1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", ANSI/NAAMM HMMA 863.
  2. Frame Fill: Prepare heads, jambs, and sills abutting structure, walls, or floors for solid anchorage with full grout fill. Exclude grout from mullions except where otherwise indicated.
  3. Grout Guards: At frames to be grouted, tightly weld 0.018" minimum steel grout guards at screw holes, cut outs, hardware preparations, including but not limited to those for silencers, removable glazing stops, locksets, pushbuttons, strike plates, and hinges. Additionally at hinge preparations provide polyurethane or polystyrene foam fill or otherwise tightly seal grout guards to keep screw holes grout free.
  4. Grout and Anchor Access Holes: Provide access holes in frames for anchoring frames in completed concrete or masonry openings and where frames cannot be grout filled from above. Provide closer plates for access holes in frames. Provide 0.106" x 2" minimum plate across frame throat welded both sides and 0.46" diameter center hole aligned to access hole.
  5. Field Splicing: Align splice joints flush, tight, and neat. Do not torch cut.
- C. Silencers: Provide rubber door mutes, 3 per single door frame, 2 per double door frame.

## 2.7 DOORS

- A. Face Sheet Thickness:
  1. As required by specified security grade.
- B. Design and Construction:
  1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
  2. Fabricate door with face sheets both sides to overall thickness of 2".
  3. Steel Stiffeners, Provide either of the following:
    - a. Extend full height top to bottom and maximum 3" from door sides.
    - b. Where stiffeners are not continuous between face sheets, weld internal joints at maximum 6" on center.
    - c. Cope at hardware preparations only.
    - d. Provide the following internal reinforcements:
      - 1) Continuous, vertically formed steel sections, formed of minimum 18 gauge steel, spanning the full thickness of the interior space between door faces, spaced no more than 4" apart and securely fastened to both face sheets by spot welds spaced a maximum of 3" on centers vertically.
  4. Edge Channels: Spot weld to both face sheets at maximum 4" on center.
  5. Flush Closing Channels: Provide at door bottom and top continuously welded in place.

6. Insulation: Core mineral fiber 48 kg/cubic meters density minimum.

C. Openings:

1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
2. Speaking Devices:
  - a. Provide speaking openings or devices at cell door frames and other doors where shown on the drawings or specified in the detention hardware section schedule of hardware Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
3. Removable Glazing Stops:
  - a. Provide 1" x 1"x 1/8" steel angle fastened to opening frame at maximum 6" on center and 3" maximum from corners. Provide Torx Security Plus, round, pan, or oval head 1/4-20 or 1/4-28, machine screw security fasteners
  - b. Provide stainless steel Torx security plus screws for exterior and shower area removable glass stops.

**2.8 PANELS**

- A. Fabricate panels of the same materials and construction as specified for the doors.

**2.9 CLEARANCES AND TOLERANCES**

- A. Unless otherwise specified or required by Code, edge clearances and manufacturing tolerances for swinging doors, shall conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.

**2.10 HARDWARE LOCATIONS**

- A. Unless otherwise shown or required by Code, locate hardware in accordance with "HMMA 830:Hardware Preparation and Locations for Hollow Metal Doors and Frames."

**PART 3 – EXECUTION**

**3.1 EXAMINATION**

- A. Examine the conditions under which security hollow metal doors and frames are to be installed. Notify the Architect in writing of conditions which may be detrimental to the satisfactory and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Verify that frames to be grouted or installed in masonry or concrete walls have been back coated with specified material.

**3.2 PREPARATION**

- A. Prior to installation, examine frames and correct for size, swing, squareness, alignment, twist, and plumbness.
- B. Back coating to be field applied.

**3.3 INSTALLATION/ERECTION**

- A. Install in accordance with final shop drawings and manufacturer's instructions, and as specified.

- B. Frames:
  - 1. Comply with the "Installation and Storage of Hollow Metal Doors and Frames", HMMA840.
  - 2. Place frames prior to construction of enclosing walls and ceilings.
    - a. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
    - b. Install a minimum of two wood frame spreaders as shown in the installation guides. Do not use temporary bottom shipping spreaders for installation.
  - 3. Fully slush (grout) frames. Hand trowel a grout of 4" maximum slump consistency in place.
  - 4. Install anchors at locations and in quantities specified or shown on drawings.
- C. Doors:
  - 1. Fit doors accurately in their respective frames in accordance with the "Installation and Storage of Hollow Metal Doors and Frames", HMMA 840.
  - 2. Maintain specified door clearances, except for special conditions otherwise noted.

### **3.4 FIELD QUALITY CONTROL**

- A. Installation Records
  - 1. Prepare and maintain written records showing that:
    - a. installers have been instructed about the proper installation procedures and acceptable tolerances.
- B. Verify installation of frames for squareness, alignment, twist, and plumbness.
  - 1. Use a PLS Frame Set - Door Frame Alignment tool to verify correctness. For sources go to [www.plsframeset.com](http://www.plsframeset.com)
  - 2. If installation is not within the tolerances specified under "Preparation", remove and reinstall the frame to comply with the specified tolerances.
- C. Check that edge clearances for swinging doors do not exceed that specified under "Manufacturing Tolerances" in Part 2 of this specification. Metal hinge shims may be used to maintain clearances.
- D. Verify that glazing sealant is pick resistant type.

### **3.5 ADJUSTING AND CLEANING**

- A. Keep hollow metal surfaces clean and free of grout, tar, or other bonding material or sealer. Clean material off of frames and doors immediately following installation.
- B. Leave work clean and in proper operating condition. Remove defective work and replace with new material. Defective work includes but is not limited to doors and frames which are warped, bowed, or damaged.
- C. Finish smooth exposed field welds and touch up with rust inhibitive primer.
- D. Touch up primed or painted surfaces which have been scratched or marred during installation. Use rust inhibitive primer.

**END OF SECTION 081115**



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**SECTION 081115.13**

**DETENTION HOLLOW METAL DOORS AND WINDOWS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENT**

- A. Drawings and General provisions of Contract, including General & Supplementary conditions and Division 1 Specifications sections apply.

**1.2 SUMMARY**

- A. Section Includes.

- 1. "Detention" grade hollow metal doors, windows and frames.
- 2. The work of this section is intended to be included with the work of Detention Hardware and shall be assigned to the single responsibility. of the qualified Detention Equipment Subcontractor (DES).

- B. Related Sections

- 1. Section 033000: Cast in Place Concrete.
- 2. Section 042200: Concrete Unit Masonry.
- 3. Section 042613: Masonry Veneer.
- 4. Section 051200: Structural Steel.
- 5. Section 061000: Rough Carpentry.
- 6. Section 081113: Hollow Metal Doors and Frames.
- 7. Section 081115.13: Detention Hollow Metal Doors.
- 8. Section 087100: Door Hardware.
- 9. Section 087173: Detention Door Hardware.
- 10. Section 088000.13 Security Glazing
- 10. Section 099123: Interior Painting.
- 12. Division 26: Electrical wiring.

**1.3 REFERENCES**

- A. Publications listed in this article form a part of this specification to the extent referenced. In case of conflict, the most restrictive requirements shall apply.
- B. American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, PA 19103:
  - 1. ASTM A370-07a:  
Test Methods and Definition for Mechanical Testing of Steel Products.
  - 2. ASTM A569-98:  
Specification for Steel, Carbon (0.15 Maximum Percent), Hot Rolled Sheet and Strip, Commercial Quality.
  - 3. ASTM 653/A653M-07:  
Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanealed) by the Hot-Dip Process [Metric].
  - 4. ASTM F 1233-98 (2004):  
Standard Test Method for Security Glazing Materials and Systems.
  - 5. ASTM F1450-05:  
Standard Test methods for Hollow Metal Swinging Door Assemblies for Detention Facilities.

- C. National Association of Architectural Metal Manufacturers (NAAMM), 8 South Michigan Avenue, Chicago, IL 60603:
  - 1. HMMA 830-02:  
Hardware Preparation and Locations for Hollow Metal Doors and Frames.
  - 2. HMMA 840-99:  
Installation and Storage of Hollow Metal Doors and Frames.
  - 3. HMMA 850-00:  
Fire Rated Hollow Metal Doors and Frames, Second Edition.
  - 4. HMMA 863-04:  
Guide Specifications for Detention Security Hollow Metal Doors and Frames.
  
- D. Underwriters Laboratories, Inc. (UL), 333 Pfingsten Road, Northbrook, IL 60062:
  - 1. UL10C-1998:  
Fire Tests of Door Assemblies.
  - 2. UL 752-05:  
Bullet Resisting Equipment.
  
- E. Door and Hardware Institute (DHI):
  - 1. Recommended Procedure for Processing Hardware Schedules and Templates-96.
  - 2. Installation Guide for Doors and Hardware-84.
  
- F. American Welding Society.
  - 1. AWS D1.1 and D1.3, CSA W47.1-92 and RWMA, Resistance Welding Manual.

#### **1.4 DEFINITIONS**

- A. HMMA: Hollow Metal Manufacturers Association.
- B. NAAMM: National Association of Architectural Metal Manufacturers.
- C. DHI: Door and Hardware Institute.
- D. AWS: American Welding Society

#### **1.5 SUBMITTALS**

- A. Submit in accordance with Division 1.
- B. Project Data.
  - 1. Submit manufacturer's material and fabrication specification and installation instructions modified to reflect project requirements and job conditions.
  - 2. Include instructions for handling, storage, and protection.
  - 3. Where applicable, provide instructions for installation in pre-cast and cast-in-place concrete.
  - 4. Include instructions for bracing of frames and frame tolerances.
- B. Shop Drawings
  - 1. Provide details of openings.
    - a. Include door and frame elevations and sections.
    - b. Indicate required anchorage and accessory items, field dimensions, and finishes.
    - c. Include plan (horizontal) section through frames and elevations.
    - d. Show erection, construction, and other requirements not fully described by manufacturer's data.

- e. Include a transverse and longitudinal section through the door showing construction and reinforcing.
  - f. Include details of hardware reinforcements, joints, connections, and light cut-outs.
  - g. Show proposed locations for Grout and Anchor Access Holes.
  - 2. Provide a schedule listing the openings with description, door locations, gauges, and anchors.
- C. Quality Assurance Submittals
- 1. Notarized statement from the Manufacturer attesting to conformance with the requirements, standards and testing required by this section.
  - 2. Reference list showing detention projects for which the manufacturer has supplied security hollow metal. Include dates of completion.
  - 3. Notarized statement from manufacturer attesting that they are a current member of NAAMM and will conform to the NAAMM standards for fabrication methods and product quality control.
  - 4. Mill Certification for materials used to fabricate specified items.
- D. Test reports:
- 1. Submit certified engineering reports from a nationally recognized independent testing laboratories showing that the results of the tests meet or exceed minimum specified performance requirements. Tested doors, frames, and other material shall be retained at the manufacturer's facility for possible future inspection.
  - 2. Include specifications and details of the construction of the tested assemblies.
    - a. The removable glazing stop test report shall include specification and samples of security screws. The manufacturer shall submit a letter certifying that screws used on this project match the screws tested.
    - b. The manufacturer shall submit a letter certifying that door assemblies used on this project match the assemblies tested in all respects.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications
- 1. Personnel and plant equipment capable of fabricating security hollow metal assemblies of the type specified.
  - 2. Meet the standards set by HMMA, a division of the NAAMM for fabrication methods and product quality control.
  - 3. Member of NAAMM and subject to quality performance requirements.
  - 4. Provide security hollow metal work manufactured by a single firm specializing in the production of detention hollow metal work. Provide doors, windows and frames from the same manufacturer.
  - 5. Welders currently qualified under AWS B2.1 or certified under CSA W47.1-92 Classification 2.1 to perform the type of work required.
  - 6. At least 10 years of experience and 3 jobs of equal complexity which have been completed and occupied within the last 5 years. References shall include, but not be limited to the following:
    - a. Name and location of project, date of occupancy and contract value.
    - b. Name, address, and telephone numbers of the Owner's operations supervisor, Owner's maintenance supervisor, Owner, and General Contractor.
  - 7. Provide documentation of labeling ability as required on specified assemblies.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, Handling, and Unloading
- 1. Carton, crate or palletize hollow metal doors, windows, frames, and other items to provide protection in transit.

- B. Acceptance at Site
  - 1. Conform to requirements of HMMA 840.
  - 2. Inspect for damage and shortages.
  - 3. Promptly repair minor damage. Clean and touch up with rust inhibitive primer or galvanizing repair paint as applicable.
  
- C. Storage and Protection
  - 1. Conform to HMMA 840.
  - 2. Remove wrappings or coverings from doors and frames immediately upon delivery to the project site.
  - 3. Store materials in a dry covered area.
  - 4. Place materials on planking or blocking, at least 4" off of the ground, 2" off of a paved area or floor slab. Do not store flat.
  - 5. Store doors and frames in an upright position with heads upper most. Place no more than 5 single opening frames or 3 multi-opening frames in a group. Provide, by means of wood strips, a space of at least 1/4" between all units to permit air circulation.
  - 6. Do not use non-vented plastic or canvas shelters which could create a humidity chamber.

## 1.8 SCHEDULING

- A. Coordinate installation with related sections.
  
- B. Jamb face dimensions on drawings are nominal. Coordinate to provide jamb opening required to accommodate hardware. Coordinate incorporation of modified frame dimensions into wall construction.
  
- C. Where frames are located in precast walls, coordinate with precast manufacturer to ensure proper installation.

## 1.9 WARRANTY

- A. Door and window manufacturer is to warranty their products for a minimum of 1 (one) Year, from the date of substantial completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
  - 1. Products of the following manufacturers will be acceptable provided they furnish the certifications and test reports necessary to document conformance with the requirements of this specification
    - a. Apex Industries Inc., Attn: Donny Gallant 1(800) 268-3331  
Website : [www.apexindustries.com](http://www.apexindustries.com).
    - b. US Security Systems, Inc., Attn: Joseph Ames (334)424-1823  
Website: [www.ussecuritysystems.com](http://www.ussecuritysystems.com)
    - c. Habersham.
    - d. Ambico.
  
  - 2. Products of other manufactures will be considered for approval if they conform to the manufacturer's qualification shown in Part 1 and if information required under "quality assurance" is submitted at least ten days prior to bid due date.

### 2.02 TESTING AND PERFORMANCE

- A. ASTM F 1450.
  - 1. Certify to successful completion and conformance to the security grades and test load requirements for the specified security grade. Include the following tests.
    - a. Door and window assembly impact test.
    - b. Door and window static load test.
    - c. Door and window rack test.
    - d. Door and window assembly fire test (where door assemblies are specified or shown as fire rated).
    - e. Door assembly and hardware tool attack test (Testing of individual door and frame components is acceptable).
    - f. Door edge crush test.
  - 2. Provide door assemblies constructed the same as the test door assemblies.
    - a.. Where door or window assembly cannot be certified as complying with ASTM 1450 because of additional specified requirements, provide proof of satisfactory completion of ASTM testing along with a certification from the manufacturer attesting that the assemblies are the same as the tested assemblies except for the modification.
  
- B. NAAMM
  - 1. Comply with ANSI/NAAMM HMMA 863-04 "Guide Specifications for Detention Security Hollow Metal Doors and Frames," except as otherwise indicated.
  
- C. Welding
  - 1. Comply with welding standards as define in AWS D1.1 and D1.3, CSA W47.1and RWMA, Resistance Welding Manual.
  - 2. Welds shall have complete penetration and fusion.
  - 3. Remove parent metal when testing welds to failure.

### **2.3 SECURITY GRADES**

- A. Conform to the security grade requirements of requirements of ASTM F 1450:
  - 1. Security grade 1: Minimum 12 gauge door face sheet and 12 gauge frame.

### **2.4 BASIC MATERIALS**

- A. Steel fabrications:
  - 1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
  
- B. Galvanizing:
  - 1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames, HMMA 863".
  - 2. (G90) Mill phosphatize in addition to coating specified in HMMA 863.
  - 3. Galvanize (G90) or apply zinc coating to doors and frames in the following areas:
    - a. Interior doors, windows and frames subject to corrosive conditions.
    - b. Other doors, windows, frames, and components specified as galvanized.
  
- C. Supports, anchors, and fasteners:
  - 1. Supports and Anchors:
    - a. Manufacturer's standard except.
      - 1. Same material as frame including gage and galvanizing where indicated.

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2. Fasteners, Bolts, and Inserts.
    - a. Manufacturer's standard units except:
      - 1) For exposed fasteners, provide Torx® security type.
    - b. Hot-dip galvanize in compliance with ASTM A 153, Class C or D as applicable.
  3. Frame anchors
    - a. Floor Anchors: Secure door jambs at floor. .
    - b. Sill Anchors: Where indicated on drawings, provide 1/8" continuous bent plate channel set in sealant, with minimum 0.0394" diameter x 3" expansion bolt anchors at 16" on centers.
    - c. Jamb Anchors: Space at 16" on centers maximum in masonry.
    - d. Head Anchors: Provide loose "T" anchors spaced 16" on centers at heads of frames in masonry openings more than 48" wide.
      - 1) Fabricate head anchors of same gauge as frame, 2" wide, with 10" long leg of "T" punched to engage lintel reinforcement.
    - e. Completed Opening Frame Anchors: Provide expansion anchor Space anchors at same interval as specified for masonry frame anchors above unless otherwise indicated.
      - 1). Accepted Anchor Bolts, supplied and installed by frame installer:
        - a) Hilti Sleeve Anchor.
        - b) Ramset/Red Head Dynabolt Sleeve.
        - c) Rawl Lok/Bolt.
- D. Finish:
1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
  2. Treat surface to assure maximum paint adhesion.
  3. Coat inside and outside surfaces of the frame and outside surfaces of the door with a rust inhibitive primer.
- E. Back Coating:
1. Back Coat frames which are to be filled with grout or installed in concrete or masonry walls.
  2. Material: Water resistant bituminous coating.
  3. Back coating to be field applied.

## 2.5 HARDWARE PREPARATION:

- A. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
- B. Concealed Hardware: Provide grout boxes to enclose item. Provide welded in mounting tabs to suit.
- C. Surface Applied Hardware: Drilling and tapping may be done at project site.
- D. Minimum gauges and sizes for hardware reinforcements:
  1. Mortise hinges and pivots:
    - a. Minimum 3/16" thick x 10" high.
    - b. Frame reinforcement: full width of the frame.
    - c. Weld minimum 12 gauge steel angle(s) at back of frame face and hinge reinforcement to resist deformation under swinging door load.
    - d. Provide additional reinforcement and bracing for top hinge by welding a 1" x 1" x 3/16" back-up angle to the inside of the frame
  2. Surface applied security hinges: 1/4" plate.
  3. Locking device hangar attachments: per device manufacturer's template or installation instructions.
  4. Lock fronts and door reinforcement for closers: Minimum 12 gauge.

5. Internal reinforcements for surface applied hardware; Minimum 12 gauge. Reinforcement for door pulls shall be not less than 1 1/2" x 12".
  6. Strike or keeper: Minimum 3/16". Weld at each of four sides to frame.
  7. Frame reinforcement for closers: Minimum 1/8" x full width of the opening. This applies even where concealed closers are specified.
  8. Flush bolt reinforcements: Minimum 3/16".
  9. Frame mounted electric lock pockets: Minimum 1/8" steel back plate. or manufacturers standard 10 gauge, one-piece lock pocket meeting ASTM test requirements.
- E. Preparation for electrified and pneumatic hardware:
1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", ANSI/NAAMM HMMA 863.
  2. Provide welded on junction boxes of sufficient size to properly encapsulate and protect the wiring connections and hardware from damage.
  3. Provide conduit in doors and frames for electrified wiring to interconnect electrified hardware and security devices specified in detention hardware and electronic security sections.. Coordinate with requirements for electronic security system to determine conduit size.
  4. Provide lock pockets and covers for electrified locks. Fabricate pockets for frame mounted locks to allow a minimum of four inches above and below lock for wiring connections.
  5. Do not cut away the lock edge reinforcing channel more than necessary to pass lock.
  6. If cylinder extensions are not specified for locks keyed on two sides, provide recessed access to second cylinder. Recess shall be a minimum of 6" x 6".

## 2.6 FRAMES

- A. Material thickness:
1. As required by specified security grade
- B. Design and Construction:
1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", ANSI/NAAMM HMMA 863.
  2. Frame Fill: Prepare heads, jambs, and sills abutting structure, walls, or floors for solid anchorage with full grout fill. Exclude grout from mullions except where otherwise indicated
  3. Grout Guards: At frames to be grouted, tightly weld 0.018" minimum steel grout guards at screw holes, cut outs, hardware preparations, including but not limited to those for silencers, removable glazing stops, locksets, pushbuttons, strike plates, and hinges. Additionally at hinge preparations provide polyurethane or polystyrene foam fill or otherwise tightly seal grout guards to keep screw holes grout free.
  4. Grout and Anchor Access Holes: Provide access holes in frames for anchoring frames in completed concrete or masonry openings and where frames cannot be grout filled from above. Provide closer plates for access holes in frames. Provide 0.106" x 2" minimum plate across frame throat welded both sides and 0.46" diameter center hole aligned to access hole.
  5. Field Splicing: Align splice joints flush, tight, and neat. Do not torch cut.
- C. Silencers: Provide rubber door mutes, 3 per single door frame, 2 per double door frame.

## 2.7 DOORS AND WINDOWS

- A. Face Sheet Thickness:
1. As required by specified security grade.
- B. Design and Construction:



1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
  2. Fabricate door with face sheets both sides to overall thickness of 2".
  3. Steel Stiffeners, Provide either of the following:
    - a. Extend full height top to bottom and maximum 3" from door sides.
    - b. Where stiffeners are not continuous between face sheets, weld internal joints at maximum 6" on center.
    - c. Cope at hardware preparations only.
    - d. Provide the following internal reinforcements:
      - 1) Continuous, vertically formed steel sections, formed of minimum 18 gauge steel, spanning the full thickness of the interior space between door faces, spaced no more than 4" apart and securely fastened to both face sheets by spot welds spaced a maximum of 3" on centers vertically
  4. Edge Channels: Spot weld to both face sheets at maximum 4" on center.
  5. Flush Closing Channels: Provide at door bottom and top continuously welded in place.
  6. Insulation: Core mineral fiber 48 kg/cubic meters density minimum.
- C. Openings:
1. Conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.
  2. Removable Glazing Stops:
    - a. Provide 1" x 1"x 1/8" steel angle fastened to opening frame at maximum 6" on center and 3" maximum from corners. Provide Torx Security Plus, round, pan, or oval head 1/4-20 or 1/4-28, machine screw security fasteners
    - b. Provide stainless steel Torx security plus screws for exterior and shower area removable glass stops.

## **2.8 PANELS**

- A. Fabricate panels of the same materials and construction as specified for the doors.

## **2.9 CLEARANCES AND TOLERANCES**

- A. Unless otherwise specified or required by Code, edge clearances and manufacturing tolerances for swinging doors, shall conform to "Guide Specifications for Detention Security Hollow Metal Doors and Frames", HMMA 863.

## **2.10 HARDWARE LOCATIONS**

- A. Unless otherwise shown or required by Code, locate hardware in accordance with "HMMA 830: Hardware Preparation and Locations for Hollow Metal Doors and Frames."

## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- A. Examine the conditions under which security hollow metal doors and frames are to be installed. Notify the Architect in writing of conditions which may be detrimental to the satisfactory and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
- B. Verify that frames to be grouted or installed in masonry or concrete walls have been back coated with specified material.

### 3.2 PREPARATION

- A. Prior to installation, examine frames and correct for size, swing, squareness, alignment, twist, and plumbness.
- B. Back coating to be field applied.

### 3.3 INSTALLATION/ERECTION

- A. Install in accordance with final shop drawings and manufacturer's instructions, and as specified.
- B. Frames:
  - 1. Comply with the "Installation and Storage of Hollow Metal Doors and Frames", HMMA 840.
  - 2. Place frames prior to construction of enclosing walls and ceilings.
    - a. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
    - b. Install a minimum of two wood frame spreaders as shown in the installation guides. Do not use temporary bottom shipping spreaders for installation.
  - 3. Fully slush (grout) frames. Hand trowel a grout of 4" maximum slump consistency in place
  - 4. Install anchors at locations and in quantities specified or shown on drawings.
- C. Doors:
  - 1. Fit doors accurately in their respective frames in accordance with the "Installation and Storage of Hollow Metal Doors and Frames", HMMA 840.
  - 2. Maintain specified door clearances, except for special conditions otherwise noted.

### 3.4 FIELD QUALITY CONTROL

- A. Installation Records
  - 1. Prepare and maintain written records showing that:
    - a. Installers have been instructed about the proper installation procedures and acceptable tolerances.
- B. Verify installation of frames for squareness, alignment, twist, and plumbness.
  - 1. Use a PLS Frame Set - Door Frame Alignment tool to verify correctness. For sources go to [www.plsframeset.com](http://www.plsframeset.com).
  - 2. If installation is not within the tolerances specified under "Preparation", remove and reinstall the frame to comply with the specified tolerances.
- C. Check that edge clearances for swinging doors do not exceed that specified under "Manufacturing Tolerances" in Part 2 of this specification. Metal hinge shims may be used to maintain clearances.
- D. Verify that glazing sealant is pick resistant type.

### 3.5 ADJUSTING AND CLEANING

- A. Keep hollow metal surfaces clean and free of grout, tar, or other bonding material or sealer. Clean material off of frames and doors immediately following installation.

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- B. Leave work clean and in proper operating condition. Remove defective work and replace with new material. Defective work includes but is not limited to doors and frames which are warped, bowed, or damaged.
- C. Finish smooth exposed field welds and touch up with rust inhibitive primer.
- D. Touch up primed or painted surfaces which have been scratched or marred during installation. Use rust inhibitive primer.

**END OF SECTION 081115.13**

**SECTION 081213**

**HOLLOW METAL FRAMES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Interior standard steel frames.
  - 2. Exterior standard steel frames.
- B. Related Requirements:
  - 1. Section 042200 "Concrete Unit Masonry" for embedding anchors for hollow metal work into masonry construction.
  - 2. Section 081113 "Hollow Metal Doors and Frames" for hollow-metal doors and frames.
  - 3. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.
  - 4. Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" for field painting hollow metal frames.

**1.3 DEFINITIONS**

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

**1.4 COORDINATION**

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

**1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, and finishes.
- B. Shop Drawings: Include the following:
  - 1. Elevations of each frame type.
  - 2. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
  - 3. Locations of reinforcement and preparations for hardware.
  - 4. Details of each different wall opening condition.
  - 5. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
  - 6. Details of anchorages, joints, field splices, and connections.

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7. Details of accessories.
  8. Details of moldings, removable stops, and glazing.
- C. Product Schedule: For hollow-metal frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of fire-rated hollow-metal frame assembly for tests performed by a qualified testing agency indicating compliance with performance requirements.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following
1. CECO Door Products (C).
  2. Curries Company (CU).
  3. Pioneer Industries (PI).
  4. Republic Doors and Frames (R).
  5. Steelcraft (S).

### 2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.

### 2.3 STANDARD STEEL FRAMES

- A. Construct hollow-metal frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Interior Frames: SDI A250.8. At locations indicated in the Door Schedule.
1. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.
  2. Construction: Knocked down.
  3. Exposed Finish: Prime..
- C. Exterior Frames: SDI A250.8. At locations indicated in the Door Schedule:

1. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch with minimum A40coating.
2. Construction: Knocked down.
3. Exposed Finish: Factory.

## 2.4 FRAME ANCHORS

- A. Jamb Anchors:
1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
  2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
  3. Post installed Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.
- D. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

## 2.5 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.
- E. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- F. Glazing: Comply with requirements in Section 088000 "Glazing."

## 2.6 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
    - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.

- b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- 3. Terminated Stops: Terminate stops 6 inches above finish floor with a 90-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.
- B. Hardware Preparation: Factory prepare hollow-metal frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.
  - 1. Reinforce frames to receive nontemplated, mortised, and surface-mounted door hardware.
  - 2. Comply with BHMA A156.115 for preparing hollow-metal frames for hardware.

## **2.7 STEEL FINISHES**

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
  - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with SDI A250.10; recommended by primer manufacturer for substrate compatible with substrate and field-applied coatings despite prolonged exposure.
- B. Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with SDI A250.3.
  - 1. Color and Gloss: As selected by Architect from manufacturer's full range..

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap frames to receive nontemplated, mortised, and surface-mounted door hardware.

### **3.2 INSTALLATION**

- A. General: Install hollow-metal frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions. Comply with SDI A250.11.
- B. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
  - 1. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
  - 2. Install frames with removable stops located on secure side of opening.
- C. Fire-Rated Openings: Install frames according to NFPA 80.
- D. Floor Anchors: Secure with post installed expansion anchors.

1. Floor anchors may be set with power-actuated fasteners instead of post installed expansion anchors if so indicated and approved on Shop Drawings.
- E. Solidly pack mineral fiber insulation inside frames.
- F. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
- G. In-Place Concrete or Masonry Construction: Secure frames in place with post installed expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
- H. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
  2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
  3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  4. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- I. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

### **3.3 CLEANING AND TOUCHUP**

- A. 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.
- B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.
- C. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish according to manufacturer's written instructions.
- D. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

**END OF SECTION 081213**



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## SECTION 081416

### FLUSH WOOD DOORS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Five-ply flush wood veneer-faced doors for transparent finish.
  - 2. Factory fitting flush wood doors to frames and factory machining for hardware.
  - 3. Section 088000 "Glazing" for glass view panels in flush wood doors.
  - 4. Section 099300 "Staining and Transparent Finishing" for field finishing doors.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product, including the following:
  - 1. Door core materials and construction.
  - 2. Door edge construction
  - 3. Door face type and characteristics.
  - 4. Door trim for openings.
  - 5. Factory-machining criteria.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:
  - 1. Door schedule indicating door and frame location, type, size, fire protection rating, and swing.
  - 2. Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.
  - 3. Details of frame for each frame type, including dimensions and profile.
  - 4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
  - 5. Dimensions and locations of blocking for hardware attachment.
  - 6. Dimensions and locations of mortises and holes for hardware.
  - 7. Clearances and undercuts.
  - 8. Requirements for veneer matching.
  - 9. Doors to be factory finished and application requirements.
  - 10. Apply AWI Quality Certification Program label to Shop Drawings.
- C. Samples for Verification:
  - 1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.

##### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For door inspector.

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1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
- B. Field quality-control reports.
- C. Sample Warranty: For special warranty.

**1.5 CLOSEOUT SUBMITTALS**

- A. Special warranties.
- B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.
- C. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

**1.6 QUALITY ASSURANCE**

- A. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies shall comply with qualifications set forth in NFPA 80, Section 5.2.3.1 and the following:
  1. DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

**1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in cardboard cartons, and wrap bundles of doors in plastic sheeting].
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

**1.8 FIELD CONDITIONS**

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

**1.9 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
  1. Failures include, but are not limited to, the following:
    - a. Delamination of veneer.
    - b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
    - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
  2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
  3. Warranty Period for Solid-Core Interior Doors: Life of installation.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Source Limitations: Obtain flush wood doors from single manufacturer.

### **2.2 PERFORMANCE REQUIREMENTS**

- A. Fire-Rated Wood Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated on Drawings, based on testing at positive pressure in accordance with UL 10Cor NFPA 252.

### **2.3 FLUSH WOOD DOORS GENERAL**

- A. Quality Standard: In addition to requirements specified, comply with AWI/AWMAC/WI's "Architectural Woodwork Standards."
1. Provide labels from AWI certification program indicating that doors comply with requirements of grades specified.

### **2.4 SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT FINISH**

- A. Interior Doors

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
- a. Masonite Architectural, 201 N. Franklin Street, Suite 300, Tampa, FL 33602, Telephone: (877) 332-4484, website: masonitearchitectural.com.
2. Performance Grade:
- a. ANSI/WDMA I.S. 1A Heavy Duty unless otherwise indicated on Drawings.
- b. ANSI/WDMA I.S. 1A Standard Duty: Closets (not including janitor's closets).
3. Architectural Woodwork Standards Grade: Premium.
4. Faces: Single-plywood veneer not less than 1/50 inch thick.
- a. Species: . To match existing species of solid core wood doors in existing building and doors adjacent to areas being installed.
- b. Cut: To match existing cut of solid core wood doors in existing building and doors adjacent to areas being installed.
- c. Match between Veneer Leaves: Book match.
- d. Assembly of Veneer Leaves on Door Faces: Center-balance match.
- e. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
- f. Room Match: Match door faces within each separate room or area of building. Corridor-door faces do not need to match where they are separated by 25 feet or more.
5. Exposed Vertical and Top Edges: Same species as faces or a compatible species - Architectural Woodwork Standards edge Type A.

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- a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.
  - b. Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
    - 1) Screw-Holding Capability: 475 lbf in accordance with WDMA T.M. 10.
6. Core for Non-Fire-Rated Doors:
- a. ANSI A208.1, Grade LD-1 particleboard.
    - 1) Blocking: Provide wood blocking in particleboard-core doors as follows:
      - a) 5-inch top-rail blocking, in doors indicated to have closers.
      - b) 5-inch bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
      - c) 5-inch midrail blocking, in doors indicated to have exit devices.
    - 2) Provide doors with glued wood-stave or WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 087100 "Door Hardware."
  - b. Glued wood stave.
  - c. WDMA I.S. 10 structural composite lumber.
    - 1) Screw Withdrawal, Door Face: 475 lbf.
    - 2) Screw Withdrawal, Vertical Door Edge: 475 lbf.
  - d. Either glued wood stave or WDMA I.S. 10 structural composite lumber.
7. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.
- a. Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as [ [follows:]
    - 1) Retain "Blocking for Mineral-Core Doors" Subparagraph above and first four subparagraphs below only after verifying availability for fire-protection rating required. Delete four subparagraphs below if retaining first option above.
    - 2) 5-inch top-rail blocking.
    - 3) 5-inch bottom-rail blocking, in doors indicated to have protection plates.
    - 4) 5-inch midrail blocking, in doors indicated to have armor plates.
    - 5) 5-inch midrail blocking], in doors indicated to have exit devices.

## 2.5 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated.
  1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  2. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.

1. Locate hardware to comply with DHI-WDHS-3.
  2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
  3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
  4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
- C. Openings: Factory cut and trim openings through doors.
1. Light Openings: Trim openings with moldings of material and profile indicated.
  2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

## **2.6 FACTORY FINISHING**

- A. Comply with referenced quality standard for factory finishing.
1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  2. Finish faces, all four edges, edges of cutouts, and mortises.
  3. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors that are indicated on Drawings to receive transparent finish.
- C. Transparent Finish:
1. Architectural Woodwork Standards Grade: Premium
  2. Finish: Architectural Woodwork Standards System-10, UV Curable, Water Based.
  3. Staining: As selected by Architect from manufacturer's full range. To match existing stained solid core wood doors in existing building and doors adjacent to areas being installed.
  4. Sheen: Satin.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
  2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Hardware: For installation, see Section 087100 "Door Hardware."
- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
- C. Install frames level, plumb, true, and straight.
1. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

2. Anchor frames to anchors or blocking built in or directly attached to substrates.
    - a. Secure with countersunk, concealed fasteners and blind nailing.
    - b. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
      - 1) For factory-finished items, use filler matching finish of items being installed.
  3. Install fire-rated doors and frames in accordance with NFPA 80.
- D. Job-Fitted Doors:
1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
    - a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.
  2. Machine doors for hardware.
  3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  4. Clearances:
    - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
    - b. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
    - c. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
    - d. Comply with NFPA 80 for fire rated doors.
  5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
  6. Bevel fire rated doors 1/8 inch in 2 inches at lock edge: trim stiles and rails only to extent permitted by labeling agency.
- E. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- F. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

### **3.3 FIELD QUALITY CONTROL**

- A. Inspections:
1. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.
- B. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80 and NFPA 101.

### **3.4 ADJUSTING**

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

**END OF SECTION 081416**

**SECTION 081433**

**STILE AND RAIL WOOD DOORS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Interior stile and rail wood doors.
  - 2. Interior fire-rated stile and rail wood doors.
- B. Related Requirements:
  - 1. Section 099300 "Staining and Transparent Finishing" for field finishing stile and rail doors.

**1.2 ACTION SUBMITTALS**

- A. Product Data:
  - 1. Interior stile and rail wood doors.
  - 2. Interior fire-rated stile and rail wood doors.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data, including the following:
  - 1. Door schedule indicating door and frame location, type, size, fire protection rating, and swing.
  - 2. Door elevations, dimensions and location of hardware, lite locations, and glazing thickness.
  - 3. Details of frame for each frame type, including dimensions and profile.
  - 4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
  - 5. Dimensions and locations of mortises and holes for hardware.
  - 6. Clearances and undercuts.
  - 7. Requirements for veneer matching.
  - 8. Doors to be factory finished and application requirements.
- C. Samples for Initial Selection: For factory-finished doors.
- D. Samples for Verification:
  - 1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For door inspector.
  - 1. Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.
- B. Field quality control reports.



- C. Sample Warranty: For special warranty.

#### **1.4 CLOSEOUT SUBMITTALS.**

- A. Special warranties.
- B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in opaque plastic bags or cardboard cartons.
- C. Mark each door on bottom rail with opening number used on Shop Drawings.

#### **1.6 FIELD CONDITIONS**

- A. Environmental Limitations:
  - 1. Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity levels designed for building occupants for the remainder of construction period.

#### **1.7 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Delamination of veneer.
    - b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
    - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
  - 2. Warranty must also include installation and finishing that may be required due to repair or replacement of defective doors
  - 3. Warranty must be in effect during specified period of time from date of Substantial Completion.
  - 4. Warranty Period for Interior Doors: Life of installation.

### **PART 2 - PRODUCTS**

#### **2.1 SOURCE LIMITATIONS**

- A. Obtain each type of stile and rail wood door from single manufacturer.

#### **2.2 PERFORMANCE REQUIREMENTS**

- A. Fire-Rated Wood Door and Frame Assemblies: Complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated on Drawings, based on testing at positive pressure in accordance with UL 10CorNFPA 252.

## 2.3 MATERIALS

- A. Use only materials that comply with referenced standards and other requirements specified.
1. Assemble exterior doors, including components, with wet-use adhesives complying with ASTM D5572 for finger joints and with ASTM D5751 for joints other than finger joints.
  2. Assemble interior doors, including components, with either dry-use or wet-use adhesives complying with ASTM D5572 for finger joints and with ASTM D5751 for joints other than finger joints.
- B. Panel Products: Any of the following unless otherwise indicated:
1. Particleboard: ANSI A208.1, Grade M-2.
  2. Medium-density fiberboard (MDF), complying with ANSI A208.2, Grade 130.
  3. Hardboard complying with ANSI A135.4.
  4. Veneer-core plywood.
- C. Safety Glass: Provide products complying with testing requirements in 16 CFR 1201, for Category II materials, unless those of Category I are expressly indicated and permitted.

## 2.4 INTERIOR STILE AND RAIL WOOD DOORS

- A. Interior Stile and Rail Wood Doors: Interior custom doors complying with AWI, AWMAC, and WI's Architectural Woodwork Standards and with other requirements specified. To match existing raised panel solid core wood doors in existing building.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ETO Doors Corp.
    - b. Karona by JELD-WEN.
    - c. VT Industries, Inc.
  2. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.
  3. ANSI/WDMA I.S. 1A Quality Grade: Custom.
  4. Architectural Woodwork Standards Quality Grade: Custom.
  5. Panel Designs: Indicated on Drawings. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
  6. Finish: Transparent. To match existing finish of solid core wood doors in existing building and doors adjacent to areas being installed.
  7. Wood Species and Cut for Transparent Finish: To match existing species and cut of solid core wood doors in existing building and doors adjacent to areas being installed.
  8. Door Construction for Transparent Finish:
    - a. Stile and Rail Construction:
      - 1) Clear lumber; may be edge glued for width. Select lumber for similarity of grain and color, and arrange for optimum match between adjacent pieces.
      - 2) Veneered, structural composite lumber or veneered, edge- and end-glued clear lumber. Select veneers for similarity of grain and color, and arrange for optimum match between adjacent pieces

- b. Raised-Panel Construction:
    - 1) Clear lumber; edge glued for width. Select lumber for similarity of grain and color, and arrange for optimum match between adjacent pieces.
    - 2) Edge-glued, clear lumber; glued to both sides of a wood-based panel product. Select lumber for similarity of grain and color, and arrange for optimum match between adjacent pieces.
  - c. Flat-Panel Construction: Veneered, wood-based panel product.
9. Stile and Rail Widths: Manufacturer's standard, but not less than the following:
- a. Stiles, Top and Intermediate Rails: 4-1/2 inches standard minimum. To match existing solid core wood doors width in existing building and doors adjacent to areas being installed.
  - b. Bottom Rails: 9 inches standard minimum. To match existing solid core wood doors width in existing building and doors adjacent to areas being installed.
10. Raised-Panel Thickness: Manufacturer's standard, but not less than 1-1/8 inches. To match existing solid core wood doors panel thickness in existing building and doors adjacent to areas being installed.
11. Flat-Panel Thickness: As indicated. To match existing solid core wood doors panel thickness in existing building.
12. Molding Profile (Sticking): Manufacturer's standard. To match existing solid core wood doors panel thickness in existing building.

## 2.5 INTERIOR FIRE-RATED STILE AND RAIL WOOD DOORS

- A. 60-Minute, Interior Fire-Rated Stile and Rail Wood Doors: Fire-rated (60-minute rating) doors complying with AWI, AWMAC, and WI's Architectural Woodwork Standards and with other requirements specified.
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ETO Doors Corp.
    - b. Karona by JELD-WEN.
    - c. VT Industries, Inc.
  - 2. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.
  - 3. ANSI/WDMA I.S. 1A Quality Grade: Custom.
  - 4. Architectural Woodwork Standards Quality Grade: Custom.
  - 5. Panel Designs: Indicated on Drawings. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
  - 6. Finish: Transparent.
  - 7. Wood Species and Cut for Transparent Finish: To match existing species and cut of solid core wood doors in existing building and doors adjacent to areas being installed.
    - a. Edge Construction for Fire-Rated Pairs of Doors:
      - 1) Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with

concealed intumescent seals. Comply with specified requirements for exposed edges.

8. Stile and Rail Widths: Manufacturer's standard, but not less than the following:
  - a. Stiles, Top and Intermediate Rails: 4-1/2 inches standard minimum. To match existing solid core wood doors width in existing building and doors adjacent to areas being installed.
  - b. Bottom Rails: 9 inches standard minimum. To match existing solid core wood doors width in existing building and doors adjacent to areas being installed.
9. Molding Profile (Sticking): Manufacturer's standard To match existing solid core wood doors profile in existing building and doors adjacent to areas being installed
10. Mark, label, or otherwise identify stile and rail wood doors as complying with WDMA I.S. 6A and grade specified.
  - 1) Screw-Holding Capability: 475 lbf in accordance with WDMA T.M. 10.
11. Edge Construction for Fire-Rated Pairs of Doors:
  - a. Fire-Retardant Stiles: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
    - 1) At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
      - a) Screw-Holding Capability: 475 lbf in accordance with WDMA T.M. 10.
12. Stile and Rail Widths Manufacturer's standard, but not less than the following:
  - a. Stiles, Top and Intermediate Rails: 4-1/2 inches standard minimum. To match existing solid core wood doors width in existing building and doors adjacent to areas being installed.
  - b. Bottom Rails: 9 inches standard minimum. To match existing solid core wood doors width in existing building and doors adjacent to areas being installed.
13. Molding Profile (Sticking): Manufacturer's standard. To match existing solid core wood doors profile in existing building and doors adjacent to areas being installed.
14. Mark, label, or otherwise identify stile and rail wood doors as complying with WDMA I.S. 6A and grade specified.

## 2.6 STILE AND RAIL WOOD DOOR FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels unless otherwise indicated:
  1. Clearances:
    - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
    - b. Provide 1/2 inch from bottom of door to top of decorative floor finish or covering.
    - c. Where threshold is shown on Drawings or scheduled, provide not more than 3/8 inch from bottom of door to top of threshold.
    - d. Comply with NFPA 80 requirements for fire-rated doors.

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2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
  3. Bevel fire-rated doors 1/8 inch in 2 inches on lock edge; trim stiles and rails only to extent permitted by labeling agency.
- B. Fabricate stile and rail wood doors in sizes indicated for field fitting.
- C. Factory machine doors for hardware that is not surface applied.
1. Locate hardware to comply with DHI-WDHS-3.
  2. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.
  3. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
  4. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.

## **2.7 FACTORY FINISHING**

- A. Comply with referenced quality standard for factory finishing.
1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
  2. Finish faces, all four edges, edges of cutouts, and mortises.
  3. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors that are indicated to receive transparent finish.
- C. Transparent Finish:
1. Architectural Woodwork Standards Grade: Custom.
    - a. System 5, varnish, conversion.
  2. Staining: As selected by Architect from manufacturer's full range, to match existing doors.
  3. Effect: Semifilled finish, produced by applying an additional finish coat to partially fill the wood pores.
  4. Sheen: Satin.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
  2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. Hardware: For installation, see Section 087100 "Door Hardware."
- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

1. Install fire-rated door frames in accordance with NFPA 80.
    - a. Install frames level, plumb, true, and straight.
      - 1) Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
    - b. Anchor frames to anchors or blocking built in or directly attached to substrates.
      - 1) Secure with countersunk, concealed fasteners and blind nailing.
      - 2) Use fine finishing nails for exposed fastening, countersunk and filled flush with woodwork.
    - c. For shop-finished items, use filler matching finish of items being installed.
  2. Install fire-rated doors in accordance with NFPA 80.
- C. Job-Fitted Doors:
1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
    - a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.
  2. Machine doors for hardware.
  3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  4. Clearances:
    - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
    - b. Provide 1/2 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
    - c. Where threshold is shown on Drawings or scheduled, provide 3/8 inch from bottom of door to top of threshold unless otherwise indicated.
    - d. Comply with NFPA 80 for fire-rated doors.
  5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
  6. Bevel fire-rated doors 1/8 inch in 2 inches on lock edge; trim stiles and rails only to extent permitted by labeling agency.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- E. Factory- Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- 3.3 ADJUSTING**
- A. Operation: Rehang or replace doors that do not swing or operate freely.
  - B. Finished Doors: Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

**END OF SECTION 081433**

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**WB MD SEC 1000 Series Medium Security Access Door**

**SUBMITTAL SHEET**

**WALLS & CEILINGS**

**FRONT ELEVATION**

**SPECIFICATIONS:**

- Door: 12 ga. steel.
- Trim: 16 ga. steel.
- Hinge: Semi-concealed piano hinge. Allows opening to 180°.
- Anchors: Heavy steel, welded to frame.
- Lock: Counter sunk tamperproof screws
- Finish: Primed white baked enamel, **paintable surface**

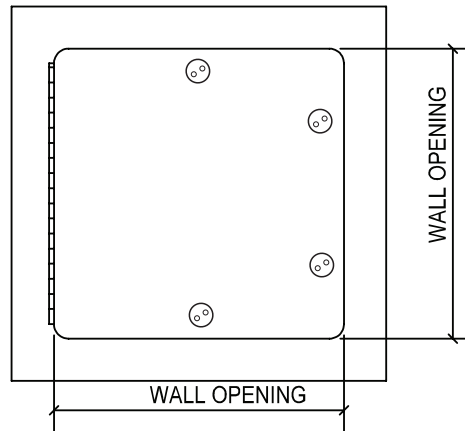
**OPTIONS (at additional cost)**

**Finishes:**

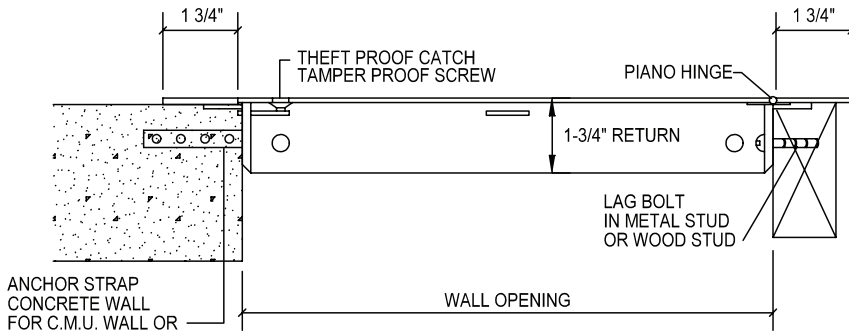
- Stainless Steel Type 304 No. 4 Satin Finish Brushed
- Stainless Steel Type 316 No. 4 Satin Finish Brushed

**Options: (additional cost)**

- Mortise lock and locks by others
- WB Key Cylinder Locks - keyed alike 2 keys per door
- Weather resistive neoprene gasket all 4 sides (Closed cell sponge, blend of Neoprene/EPDM/SBR. Meets ASTM D-1056: SCE 41, RE 41, 2A1; substrate UL 94HF-1 recognized)
- Special sizes available
- \_\_\_\_\_



**SECTION DETAIL**



✓	Model No.	Door Size W x H	Wall Opening	Tamper Proof Screws	Ship Wt. Lbs.
	MD SEC 1000	12 x 12	12 1/4 x 12 1/4	3	22
	MD SEC 1000	16 x 16	16 1/4 x 16 1/4	3	31
	MD SEC 1000	18 x 18	18 1/4 x 18 1/4	3	36
	MD SEC 1000	24 x 24	24 1/4 x 24 1/4	4	52
	MD SEC 1000	24 x 36	24 1/4 x 36 1/4	4	73
	MD SEC 1000	36 x 36	36 1/4 x 36 1/4	5	103
	WB-23	Snake eye screwdriver			

Tamper proof snake-eye screws **WB-11B**

A special snake eye screwdriver is required to open this door



This door assures medium security whenever it is necessary under institutional conditions. Most detention buildings and mental care facilities require access to vital services in or behind walls, shafts and stairwells.

Project: \_\_\_\_\_ Date: \_\_\_\_\_  
 Contractor: \_\_\_\_\_ Architect: \_\_\_\_\_  
 Sizes: \_\_\_\_\_ Quantity: \_\_\_\_\_ App Initials: \_\_\_\_\_

1330 Progress Drive • Front Royal, VA 22630 • Phone: 1-800-255-5515 • [www.wbdoors.com](http://www.wbdoors.com)



**RELATED PRODUCTS**

**WB HG SEC 1100 Series High Security Access Door**



**BuyOnline**



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## SECTION 084113

### ALUMINUM-FRAMED STOREFRONTS

#### PART 1 GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section covers Kawneer Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
- B. Types of Kawneer Aluminum Storefront Systems include:
  - 1. Trifab® VersaGlaze® 451T Framing System
    - a. 2" x 4-1/2" nominal dimension.
    - b. Thermal.
    - c. Front, center, back, multi-plane, structural silicone or weatherseal (type B) glazed.
    - d. Screw spline, shear block, stick, or punched opening.
- C. Related Sections:
  - 1. 079200: Joint Sealants.
  - 2. 084413: Glazed Aluminum Curtain Walls.
  - 3. 088000: Glazing.

##### 1.3 DEFINITIONS

- A. For fenestration industry standard terminology and definitions, refer to the Fenestration & Glazing Industry Alliance (FGIA) Glossary (AAMA AG-13).

##### 1.4 PERFORMANCE REQUIREMENTS

- A. General Performance:
  - 1. Product to comply with the specified performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction, as determined by testing of aluminum storefront systems representing those indicated for this project.
  - 2. Aluminum storefront systems shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
  - 3. Failure includes any of these events:
    - a. Thermal stresses transferring to building structure.

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- b. Glass breakage.
  - c. Loosening or weakening of fasteners, attachments, and other components.
  - d. Failure of operating units.
- B. Delegated Design:
  1. Design aluminum storefront systems, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Wind Loads:
  1. The storefront system shall include anchorage that is capable of withstanding the following wind load design pressures:
    - a. Inward: (\_\_\_\_\_) psf or (\_\_\_\_\_) Pa
    - b. Outward: (\_\_\_\_\_) psf or (\_\_\_\_\_) Pa
- D. Air Leakage:
  1. The test specimen shall be tested in accordance with ASTM E 283.
  2. With interior seal, air leakage rate shall not exceed 0.06 cfm/ft<sup>2</sup> (0.3 l/s · m<sup>2</sup>) at a static air pressure differential of 6.2 psf (300 Pa).
  3. Without interior seal, air leakage rate shall not exceed 0.06 cfm/ft<sup>2</sup> (0.3 l/s · m<sup>2</sup>) at a static air pressure differential of 1.6 psf (75 Pa).
  4. CSA A440 Fixed Rating.
- E. Water Resistance:
  1. The test specimen shall be tested in accordance with ASTM E 331.
  2. There shall be no leakage at a minimum static air pressure differential of 8 psf (383 Pa) as defined in AAMA 501.
- F. Uniform Load:
  1. A static air design load of 35 psf (1680 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330.
  2. There shall be no deflection in excess of L/175 of the span of any framing member.
  3. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
- G. Seismic:
  1. When tested to AAMA 501.4, system must meet design displacement (elastic) of 0.010 x the story height and ultimate displacement (inelastic) of 1.5 x the design displacement.
- H. Thermal Movements:
  1. Allow for thermal movements resulting from the following:
    - a. 0°F (-18 C) to 180°F (82 C) maximum change (range) in ambient and surface temperatures
    - b. 75°F (24 C) test interior ambient air temperature

2. Test performance shows no buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5 for a minimum 3 cycles.
- I. Thermal Transmittance (U-factor):
    1. Thermal transmittance test results are based upon 1" (25.4 mm) clear high-performance insulating glass [1/4" (e=0.035, #2), 1/2" warm edge spacer and argon fill gas, 1/4"].
    2. When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:
      - a. Glass to exterior .47 (low-e) or 0.61 (clear) or project specific (\_\_\_\_) Btu/hr/ft<sup>2</sup>/°F per AAMA 507 or (\_\_\_\_) Btu/hr/ft<sup>2</sup>/°F per NFRC 100.
      - b. Glass to center .44 (low-e) or 0.61 (clear) or project specific (\_\_\_\_) Btu/hr/ft<sup>2</sup>/°F per AAMA 507 or (\_\_\_\_) Btu/hr/ft<sup>2</sup>/°F per NFRC 100.
      - c. Glass to interior .41 (low-e) or 0.56 (clear) or project specific (\_\_\_\_) Btu/hr/ft<sup>2</sup>/°F per AAMA 507 or (\_\_\_\_) Btu/hr/ft<sup>2</sup>/°F per NFRC 100.
  - J. Condensation Resistance Factor (CRF):
    1. The glass to exterior CRF, when tested to AAMA Specification 1503, shall not be less than 70<sub>frame</sub> and 69<sub>glass</sub> (low-e) or 69<sub>frame</sub> and 58<sub>glass</sub> (clear)
    2. The glass to center CRF, when tested to AAMA Specification 1503, shall not be less than 62<sub>frame</sub> and 68<sub>glass</sub> (low-e) or 63<sub>frame</sub> and 56<sub>glass</sub> (clear)
    3. The glass to interior CRF, when tested to AAMA Specification 1503, shall not be less than 56<sub>frame</sub> and 67<sub>glass</sub> (low-e) or 54<sub>frame</sub> and 58<sub>glass</sub> (clear)
  - K. Sound Transmission Class (STC) and Outdoor-Indoor Transmission Class (OITC):
    1. Sound transmission loss test results in accordance with AAMA 1801 are based upon 1" (25.4 mm) clear double laminated insulating glass with PVB interlayer (1/8", 0.030", 1/8", 1/2" AS, 1/8", 0.030", 1/8").
    2. The glass to exterior ratings, when tested to ASTM E1425 and ASTM E90, shall not be less than STC 38 and OITC 31.
    3. The glass to center ratings, when tested to ASTM E1425 and ASTM E90, shall not be less than STC 37 and OITC 30.
    4. The glass to interior ratings, when tested to ASTM E1425 and ASTM E90, shall not be less than STC 38 and OITC 30.
  - L. Impact Resistance Performance:
    1. The test specimen shall be tested in accordance with ASTM E 1886, information in ASTM E 1996 and TAS 201/203.
    2. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade.
    3. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade.

M. Blast Mitigation Performance:

1. The test specimen shall be tested or proven through analysis to meet ASTM F1642, GSA-TS01, and UFC 04-010.01 performance criteria.
2. To meet UFC 04-010.01, B-3.1 Standard 10 for Windows and Skylights, the following options are available:
  - a. Section B-3.1.1 Dynamic analysis
  - b. Section B-3.1.2 Testing
  - c. Section B-3.1.3 ASTM F2248 Design Approach

N. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.

## 1.5 SUBMITTALS

A. Product Data:

1. For each type of aluminum-framed storefront system indicated, include:
  - a. Construction details
  - b. Material descriptions
  - c. Dimensions of individual components and profiles
  - d. Hardware
  - e. Finishes
  - f. Installation instructions
2. Recycled Content:
  - a. Provide documentation that aluminum has a minimum of 50% mixed pre- and post-consumer recycled content.
  - b. Provide a sample document illustrating project-specific information that will be provided after product shipment.
  - c. After product has shipped, provide project-specific recycled content information:
    - 1) Indicate recycled content, including the percentage of pre- and post-consumer recycled content per unit of product.
    - 2) Indicate the relative dollar value of recycled content product to the total dollar value of product included in the project.
    - 3) Indicate the location for recovery of recycled content.
    - 4) Indicate the location of the manufacturing facility.
3. Environmental Product Declaration (EPD):
  - a. Include a Type III Product-Specific EPD created from a Product Category Rule.
4. Material Ingredient Reporting:
  - a. Include documentation for material reporting that has a complete list of chemical ingredients to at least 100 ppm (0.01%) that covers 100% of the product.

B. Shop Drawings:

1. Plans
  2. Elevations
  3. Sections
  4. Details
  5. Hardware
  6. Attachments to other work
  7. Operational clearances
  8. Installation details
- C. Samples for Initial Selection:
1. Provide samples for units with factory-applied color finishes.
  2. Provide samples of hardware and accessories involving color selection.
- D. Samples for Verification:
1. Provide a verification sample for aluminum-framed storefront system and required components.
- E. Product Test Reports:
1. Provide test reports for each type of aluminum-framed storefront used in the project.
  2. Test reports must be based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency.
  3. Test reports must indicate compliance with performance requirements.
- F. Fabrication Sample:
1. Provide a fabrication sample of each vertical-to-horizontal intersection of aluminum-framed systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
    - a. Joinery, including concealed welds.
    - b. Anchorage.
    - c. Expansion provisions.
    - d. Glazing.
    - e. Flashing and drainage.

## **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications:
1. Installer must have successfully installed the same or similar units required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications:
1. Manufacturer must be capable of providing aluminum-framed storefront systems that meet or exceed performance the stated performance requirements.

2. Manufacturer must document this performance by the inclusion of test reports and calculations.
- C. Source Limitations:
  1. Obtain aluminum-framed storefront system through one source from a single manufacturer.
- D. Product Options:
  1. Drawings indicate size, profiles, and dimensional requirements of aluminum-framed storefront system and are based on the specific system indicated. Refer to Division 01 Product Requirements Section. Do not modify size and dimensional requirements.
  2. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Pre-installation Conference:
  1. Conduct conference at project site to comply with requirements in Division 01 Project Management and Coordination Section.
- F. Structural-Sealant Glazing must comply with ASTM C 1401, "Guide for Structural Sealant Glazing" for design and installation of structural-sealant-glazed systems.
- G. Structural-Sealant Joints: Design reviewed and approved by structural-sealant manufacturer.

## **1.7 PROJECT CONDITIONS**

- A. Field Measurements:
  1. Verify actual dimensions of aluminum-framed storefront openings by field measurements before fabrication.
  2. Indicate measurements on shop drawings.

## **1.8 WARRANTY**

- A. Submit manufacturer's standard warranty for owner's acceptance.
- B. Warranty Period:
  1. Two years from Date of Substantial Completion of the project provided however that in no event shall the Limited Warranty begin later than six months from date of shipment by manufacturer.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Basis-of-Design Product:
  1. Kawneer Company, Inc.
  2. Trifab® VersaGlaze® 451T Framing System

- a. 2" x 4-1/2" nominal dimension.
- b. Thermal.
- c. Front, center, back, multi-plane, structural silicone or weatherseal (type B) glazed.
- d. Screw spline, shear block, stick, or punched opening.

B. Substitutions:

1. Refer to Division 01 Substitutions Section for procedures and submission requirements.
2. Pre-Contract (Bidding Period) Substitutions:
  - a. Submit written requests ten (10) days prior to bid date.
3. Post-Contract (Construction Period) Substitutions:
  - a. Submit written request in order to avoid installation and construction delays.
4. Product Literature and Drawings:
  - a. Submit product literature and drawings modified to suit specific project requirements and job conditions.
5. Certificates:
  - a. Submit certificate(s) certifying that the substitute manufacturer (1) attests to adherence to specification requirements for storefront system performance criteria, and (2) has been engaged in the design, manufacture, and fabrication of aluminum storefronts for a period of not less than ten (10) years.
6. Test Reports:
  - a. Submit test reports verifying compliance with each test requirement required by the project.
7. Samples:
  - a. Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

C. Substitution Acceptance:

1. Acceptance will be in written form, either as an addendum or modification.
2. Acceptance will be documented by a formal change order signed by the owner and contractor.

## 2.2 MATERIALS

A. Aluminum Extrusions:

1. Alloy and temper recommended by aluminum storefront manufacturer for strength, corrosion resistance, and application of required finish.
2. Not less than 0.070" (1.8 mm) wall thickness at any location for the main frame.
3. Complying with ASTM B221: 6063-T6 alloy and temper.
4. Recycled Content:
  - a. Shall have a minimum of 50% mixed pre- and post-consumer recycled content.
  - b. Indicate recycled content, including the percentage of pre- and post-consumer recycled content per unit of product.



- c. Indicate the relative dollar value of recycled content product to the total dollar value of product included in the project.
  - d. Indicate the location for recovery of recycled content.
  - e. Indicate the location of the manufacturing facility.
- B. Fasteners:
1. Aluminum, nonmagnetic stainless steel or other materials must be non-corrosive and compatible with aluminum members, trim hardware, anchors, and other components.
- C. Anchors, Clips, and Accessories:
1. Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.
  2. Anchors, clips, and accessories shall provide sufficient strength to withstand the design pressure indicated.
- D. Reinforcing Members:
1. Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.
  2. Reinforcing members must provide sufficient strength to withstand the design pressure indicated.
- E. Sealant:
1. For sealants required within fabricated storefront system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
- F. Tolerances:
1. References to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

### **2.3 STOREFRONT FRAMING SYSTEM**

- A. Thermal Barrier:
1. Kawneer IsoLock® Thermal Break with dual nominal 1/4" (6.4 mm) separation consisting of a two-part chemically curing, high-density polyurethane, which is mechanically and adhesively joined to aluminum storefront sections.
  2. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.
- B. Brackets and Reinforcements:
1. Manufacturer's standard high-strength aluminum with non-staining, non-ferrous shims for aligning system components.
- C. Fasteners and Accessories:

1. Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories must be compatible with adjacent materials.
  2. Where exposed, fasteners and accessories shall be stainless steel.
- D. Perimeter Anchors:
1. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- E. Packing, Shipping, Handling, and Unloading:
1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- F. Storage and Protection:
1. Store materials so that they are protected from exposure to harmful weather conditions.
  2. Handle material and components to avoid damage.
  3. Protect material against damage from elements, construction activities, and other hazards before, during, and after installation.

## **2.4 GLAZING SYSTEMS**

- A. Glazing to meet requirements in Division 08 Glazing Section.
- B. Glazing Gaskets:
1. Manufacturer's standard compression types.
  2. Replaceable, extruded EPDM rubber.
- C. Spacers and Setting Blocks:
1. Manufacturer's standard elastomeric type.
- D. Bond-Breaker Tape:
1. Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.
- E. Glazing Sealants for structural-sealant-glazed systems as recommended by manufacturer for joint type, and as follows:
1. Structural Sealant:
    - a. ASTM C 1184.
    - b. Single-component neutral-curing silicone formulation that is compatible with the system components with which it comes in contact.
    - c. Specifically formulated and tested for use as structural sealant and approved by a structural-sealant manufacturer for use in the aluminum-framed systems indicated.
    - d. Color: Black
  2. Weatherseal sealant:
    - a. ASTM C 920 for Type S, Grade NS, Class 25, Uses NT, G, A, and O

- b. Single-component neutral-curing formulation that is compatible with the structural sealant and other system components with which it comes in contact
- c. Recommended by structural-sealant, weatherseal-sealant, and aluminum-framed-system manufacturers for this use
- d. Color: Matching structural sealant

## **2.5 ACCESSORY MATERIALS**

- A. Joint Sealants:
  - 1. For installation at perimeter of aluminum-framed systems, as specified in Division 07 Joint Sealants Section.
- B. Bituminous Paint:
  - 1. Cold-applied asphalt-mastic paint.
  - 2. Complies with SSPC-Paint 12 requirements except containing no asbestos.
  - 3. Formulated for 30-mil thickness per coat.

## **2.6 FABRICATION**

- A. Fabricate framing member components that, when assembled, have the following characteristics:
  - 1. Profiles that are sharp, straight, and free of defects or deformations.
  - 2. Accurately fitted joints that are flush, hairline, and weatherproof.
  - 3. Means to drain water passing joints, condensation within framing members, and moisture migrating within the system to exterior.
  - 4. Physical and thermal isolation of glazing from framing members.
  - 5. Accommodations for thermal and mechanical movements of glazing and framing that maintain required glazing edge clearances.
  - 6. Provisions for field replacement of glazing.
  - 7. Fasteners, anchors, and connection devices that are concealed from view to the greatest extent possible.
- B. Mechanically Glazed Framing Members:
  - 1. Fabricate for flush glazing without projecting stops.
- C. Structural-Sealant-Glazed Framing Members:
  - 1. Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.
- D. Storefront Framing:
  - 1. Fabricate components for assembly using manufacturer's standard installation instructions.

- E. After fabrication, clearly mark components to identify their locations in project according to shop drawings.

## **2.7 ALUMINUM FINISHES**

- A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
  - 1. Kawneer Permanodic® AA-M10C21A44 / AA-M45C22A44, AAMA 611, Architectural Class I Color Anodic Coating (Color: White) Match color on existing windows.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. With installer present, examine openings, substrates, structural support, anchorage, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work:
  - 1. Verify rough opening dimensions.
  - 2. Verify levelness of sill plate.
  - 3. Verify operational clearances.
  - 4. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components for proper water management.
  - 5. Masonry Surfaces:
    - a. Masonry surfaces must be visibly dry and free of excess mortar, sand, and other construction debris.
  - 6. Wood Frame Walls:
    - a. Wood frame walls must be dry, clean, sound, well nailed, free of voids, and without offsets at joints.
    - b. Ensure that nail heads are driven flush with surfaces in opening and within 3" (76.2 mm) of opening.
  - 7. Metal Surfaces:
    - a. Metal surfaces must be dry and clean (free of grease, oil, dirt, rust, corrosion, and welding slag).
    - b. Ensure that metal surfaces are without sharp edges or offsets at joints.
- B. Proceed with installation only after correcting unsatisfactory conditions.

### **3.2 INSTALLATION**

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing aluminum-framed storefront system, accessories, and other components.
- B. Install aluminum-framed storefront system so that components:

1. Are level, plumb, square, and true to line.
  2. Are without distortion and do not impede thermal movement.
  3. Are anchored securely in place to structural support.
  4. Are in proper relation to wall flashing and other adjacent construction.
- C. Set sill members in bed of sealant or with gaskets, as indicated, for weather-tight construction.
- D. Install aluminum-framed storefront system and components to drain condensation, water penetrating joints, and moisture migrating within aluminum-framed storefront system to the exterior.
- E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

### **3.3 FIELD QUALITY CONTROL**

- A. Field Tests:
1. Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured.
  2. Conduct tests for air infiltration and water penetration with manufacturer's representative present.
  3. Tests that do not meet the specified performance requirements and units that have deficiencies shall be corrected as part of the contract amount.
  4. Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements.
  5. Air Infiltration Tests:
    - a. Conduct tests in accordance with ASTM E 783.
    - b. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft<sup>2</sup>, whichever is greater.
  6. Water Infiltration Tests:
    - a. Conduct tests in accordance with ASTM E 1105.
    - b. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.2 psf (300 Pa).
- B. Manufacturer's Field Services:
1. Upon owner's written request, provide periodic site visit by manufacturer's field service representative.

### **3.4 ADJUSTING, CLEANING, AND PROTECTION**

- A. Adjusting: Not applicable.
- B. Protection:
1. Protect installed product's finish surfaces from damage during construction.
- C. Cleaning:

1. Clean glass immediately after installation.
  - a. Comply with glass manufacturer's written recommendations for final cleaning and maintenance.
  - b. Remove non-permanent labels and clean surfaces.
2. Clean aluminum surfaces.
3. Avoid damaging protective coatings and finishes.
4. Remove excess sealants, glazing materials, dirt, and other substances.
5. Repair or replace damaged installed products.
6. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.
7. Remove construction debris from project site and legally dispose of debris.

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**END OF SECTION 084313**

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## SECTION 084413

### GLAZED ALUMINUM CURTAIN WALLS

#### PART 1 GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. This Section covers Kawneer Architectural Aluminum Curtain Wall Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.
- B. Types of Kawneer Aluminum Curtain Wall Systems include:
1. 1600 Wall System®1 Curtain Wall:
    - a. Sight line: 2-1/2"
    - b. Outside-glazed pressure plate format
    - c. System depth: 6" or 7-1/2" for 1" insulating glazing and 1/4" monolithic glazing
- C. Related Sections:
1. 079200: Joint Sealants
  2. 084313: Aluminum-Framed Storefronts
  3. 084433: Sloped Glazing Assemblies
  4. 088000: Glazing

##### 1.3 DEFINITIONS

- A. For fenestration industry standard terminology and definitions, refer to the Fenestration & Glazing Industry Alliance (FGIA) Glossary (AAMA AG-13).

##### 1.4 PERFORMANCE REQUIREMENTS

- A. General Performance:
1. Product to comply with the specified performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction, as determined by testing of glazed aluminum curtain walls representing those indicated for this project.
  2. Glazed aluminum curtain walls shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
  3. Failure includes any of these events:
    - a. Thermal stresses transferring to building structure.
    - b. Glass breakage.



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- c. Loosening or weakening of fasteners, attachments, and other components
  - d. Failure of operating units
- B. Delegated Design:
- 1. Design glazed aluminum curtain walls, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Wind Loads:
- 1. The curtain wall system shall include anchorage that is capable of withstanding the following wind load design pressures:
    - a. Inward: (\_\_\_\_\_) psf or (\_\_\_\_\_) Pa
    - b. Outward: (\_\_\_\_\_) psf or (\_\_\_\_\_) Pa
- D. Air Leakage:
- 1. The test specimen shall be tested in accordance with ASTM E 283.
  - 2. Air infiltration rate shall not exceed 0.06 cfm/ft<sup>2</sup> (0.3 l/s · m<sup>2</sup>) at a static air pressure differential of 6.2 psf (300 Pa).
- E. Water Resistance:
- 1. Static:
    - a. The test specimen shall be tested in accordance with ASTM E 331.
    - b. There shall be no leakage at a minimum static air pressure differential of 12 psf (575 Pa) as defined in AAMA 501.
  - 2. Dynamic:
    - a. The test specimen shall be tested in accordance with AAMA 501.1.
    - b. There shall be no leakage at an air pressure differential of 12 psf (575 Pa) as defined in AAMA 501.
- F. Uniform Load:
- 1. A static air design load of 40 psf (1915 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330.
  - 2. There shall be no deflection in excess of L/175 of the span of any framing member at design load.
- At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

G. Seismic:

1. When tested to AAMA 501.4, system must meet design displacement (elastic) of 0.010 times the story height and ultimate displacement (inelastic) of 1.5 times the design displacement.
2. When tested to AAMA 501.6, system must meet dynamic seismic drift causing glass fallout ( $\Delta$ Fallout) of 4.75" or 0.0300 times the story height.

H. Thermal Transmittance (U-factor), Physical Test:

1. Thermal transmittance test results in accordance with AAMA 1503 or CSA A440 are based upon 1" (25.4 mm) clear insulating glass (1/4", 1/2" AS, 1/4").
2. When tested using AAMA 1503, the thermal transmittance (U-factor) shall not be more than 0.66 Btu/hr/(hr·ft<sup>2</sup>·°F).

I. Thermal Transmittance (U-factor), Physical Test:

1. Thermal transmittance test results in accordance with AAMA 1503 or CSA A440 are based upon 1" (25.4 mm) clear, low-emissivity coated glass insulating unit, (1/4" e=0.035, #2), 1/2" warm edge spacer and argon fill gas, 1/4").
2. When tested using AAMA 1503, the thermal transmittance (U-factor) shall not be more than 0.43 Btu/(hr·ft<sup>2</sup>·°F).

J. Thermal Transmittance (U-factor), Simulation:

1. Thermal transmittance simulation results using NFRC 100 or AAMA 507 are based on a Center of Glass (COG) U-factor of 0.24 Btu/(hr·ft<sup>2</sup>·°F) and a warm-edge spacer.
2. When simulated using NFRC 100 or AAMA 507, the U-factor shall not be more than 0.39 Btu/(hr·ft<sup>2</sup>·°F) or project specific (\_\_\_\_) Btu/(hr·ft<sup>2</sup>·°F) per AAMA 507 or (\_\_\_\_) Btu/(hr·ft<sup>2</sup>·°F) per NFRC 100.

K. Condensation Resistance Factor (CRF) or Temperature Index (TI):

1. Condensation resistance test results in accordance with AAMA 1503 or CSA A440 are based upon 1" (25.4 mm) clear insulating glass (1/4", 1/2" AS, 1/4").
2. If using CRF: When tested using AAMA 1503, the CRF<sub>frame</sub> and CRF<sub>glass</sub> shall not be less than 66 and 60 respectively.
3. If using TI: When tested to CSA A440-00, the TI<sub>frame</sub> and TI<sub>glass</sub> shall not be less than 68 and 54 respectively.

L. Condensation Resistance Factor (CRF) or Temperature Index (TI):

1. Condensation resistance test results in accordance with AAMA 1503 or CSA A440 are based upon 1" (25.4 mm) clear low emissivity coated insulating glass, (1/4" e=0.035, #2), 1/2" warm edge spacer and argon fill gas, 1/4").
2. When tested using AAMA 1503, the CRF<sub>frame</sub> and CRF<sub>glass</sub> (with low-emissivity glazing) shall not be less than 71 and 71 respectively.

M. Sound Transmission Loss:

1. When tested to ASTM E90 and ASTM E1425, the Sound Transmission Class (STC) and Outdoor/Indoor Transmission Class (OITC) shall not be less than:
  - a. STC 31 or OITC 26 based upon 1" (25.4 mm) insulating glass (1/4", 1/2" AS, 1/4")

- b. STC 37 or OITC 30 based upon 1" (25.4 mm) laminated glass (1/4" laminated, 1/2" AS, 1/4" laminated)
- N. Windborne-Debris-Impact Resistance Performance:
- 1. Performance shall be tested in accordance with TAS 201/203, ASTM E1886 and information in ASTM E1996:
    - a. Large-Missile Impact: For aluminum-framed systems located within 30 feet (9.1 m) of grade
    - b. Small-Missile Impact: For aluminum-framed systems located above 30 feet (9.1 m) of grade
- O. Blast Mitigation Performance:
- 1. Performance shall be tested or proven through analysis to meet ASTM F1642, GSA-TS01, and UFC 04-010.01 performance criteria.
  - 2. The following options are available to meet UFC 04-010-01, B-3.1 Standard 10 for Windows and Skylights:
    - a. Section B-3.1.1 Dynamic analysis
    - b. Section B-3.1.2 Testing
    - c. Section B-3.1.3 ASTM F2248 Design Approach
- P. Environmental Product Declaration (EPD): Shall have a Type III Product-Specific EPD created from a Product Category Rule.
- Q. Material Ingredient Reporting:
- 1. Shall have a complete list of chemical ingredients to at least 100 ppm (0.01%) that covers 100% of the product.
  - 2. Acceptable documentation includes:
    - a. Manufacturer's inventory with Chemical Abstract Service Registration Number (CASRN or CAS#):
      - 1) Kawneer's Material Transparency Summary (MTS).

## 1.5 SUBMITTALS

- A. Product Data:
- 1. For each type of product indicated, include:
    - a. Construction details
    - b. Material descriptions
    - c. Dimensions of individual components and profiles
    - d. Finishes
  - 2. Recycled Content:
    - a. Provide documentation that aluminum has a minimum of 50% mixed pre- and post-consumer recycled content.

3. Environmental Product Declaration (EPD):
  - a. Include a Type III Product-Specific EPD created from a Product Category Rule.
4. Material Ingredient Reporting:
  - a. Include documentation for material reporting that has a complete list of chemical ingredients to at least 100 ppm (0.01%) that covers 100% of the product.
- B. Shop Drawings:
  1. Plans
  2. Elevations
  3. Sections
  4. Full-size details
  5. Attachments to other work
- C. Samples for Initial Selection:
  1. Provide samples for units with factory-applied color finishes.
- D. Samples for Verification:
  1. Provide a verification sample for each type of exposed finish required, in manufacturer's standard sizes.
- E. Product Test Reports:
  1. Provide test reports for glazed aluminum curtain walls.
  2. Test reports must be based on evaluation of comprehensive tests performed by a qualified preconstruction testing agency.
  3. Test reports must indicate compliance with performance requirements.
- F. Fabrication Sample:
  1. Provide a fabrication sample of each vertical-to-horizontal intersection of aluminum-framed curtain wall systems, made from 12" (304.8 mm) lengths of full-size components and showing details of the following:
    - a. Joinery
    - b. Glazing

## 1.6 QUALITY ASSURANCE

- A. Installer Qualifications:
  1. Installer must have successfully installed the same or similar systems required for the project and other projects of similar size and scope.
- B. Manufacturer Qualifications:
  1. Manufacturer must be capable of fabricating glazed aluminum curtain walls that meet or exceed the stated performance requirements.
- C. Source Limitations:
  1. Obtain aluminum curtain wall system through one source from a single manufacturer.

D. Product Options:

1. Information on drawings and in specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
2. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

E. Pre-installation Conference:

1. Conduct conference at project site to comply with requirements in Division 01 Project Management and Coordination Section.

**1.7 PROJECT CONDITIONS**

A. Field Measurements:

1. Verify actual locations of structural supports for glazed aluminum curtain walls by field measurements before fabrication.
2. Indicate measurements on shop drawings.

**1.8 WARRANTY**

A. Submit manufacturer's standard warranty for owner's acceptance.

B. Warranty Period:

1. Two years from Date of Substantial Completion of the project provided however that in no event shall the Limited Warranty begin later than six months from date of shipment by manufacturer.

**PART 2 PRODUCTS**

**2.1 MANUFACTURERS**

A. Basis-of-Design Product:

1. Kawneer Company, Inc.
2. 1600 Wall System®1 Curtain Wall types:
  - a. 1600 Wall System®1 Curtain Wall:
    - 1) Sight line: 2-1/2"
    - 2) Outside-glazed pressure plate format
    - 3) System depth: 6" or 7-1/2" for 1" insulating glazing and 1/4" monolithic glazing
3. Tested to AAMA 501, ASTM E 1886, E 1996, and TAS 201, 202, 203

- B. Subject to compliance with requirements, provide a comparable product by the following:
1. Manufacturer: (\_\_\_\_\_)
  2. Series: (\_\_\_\_\_)
  3. Profile Dimension: (\_\_\_\_\_)
- C. Substitutions:
1. Refer to Division 01 Substitutions Section for procedures and submission requirements.
  2. Pre-Contract (Bidding Period) Substitutions:
    - a. Submit written requests ten (10) days prior to bid date.
  3. Post-Contract (Construction Period) Substitutions:
    - a. Submit written request in order to avoid installation and construction delays.
  4. Product Literature and Drawings:
    - a. Submit product literature and drawings modified to suit specific project requirements and job conditions.
  5. Certificates:
    - a. Submit certificate(s) certifying that the substitute manufacturer (1) attests to adherence to specification requirements for curtain wall system performance criteria, and (2) has been engaged in the design, manufacture, and fabrication of aluminum curtain walls for a period of not less than ten (10) years.
  6. Test Reports:
    - a. Submit test reports verifying compliance with each test requirement required by the project.
  7. Samples:
    - a. Provide samples of typical product sections and finish samples in manufacturer's standard sizes.
- D. Substitution Acceptance:
1. Acceptance will be in written form, either as an addendum or modification.
  2. Acceptance will be documented by a formal change order signed by the owner and contractor.

## 2.2 MATERIALS

- A. Aluminum Extrusions:
1. Alloy and temper recommended by glazed aluminum curtain wall manufacturer for strength, corrosion resistance, and application of required finish.
  2. Not less than 0.070" wall thickness at any location for the main frame.
  3. Complying with ASTM B221: 6063-T6 alloy and temper.
  4. Recycled Content:
    - a. Shall have a minimum of 50% mixed pre- and post-consumer recycled content.
    - b. Indicate recycled content, including the percentage of pre- and post-consumer recycled content per unit of product.
    - c. Indicate the relative dollar value of recycled content product to the total dollar value of product included in the project.
    - d. Indicate the location for recovery of recycled content.

- e. Indicate the location of the manufacturing facility.
- B. Aluminum Sheet Alloy:
  - 1. Shall meet the requirements of ASTM B209.
- C. Fasteners:
  - 1. Aluminum, nonmagnetic stainless steel or other materials must be non-corrosive and compatible with aluminum members, trim hardware, anchors, and other components.
- D. Anchors, Clips, and Accessories:
  - 1. Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.
  - 2. Anchors, clips, and accessories shall provide sufficient strength to withstand the design pressure indicated.
- E. Pressure Plate:
  - 1. Pressure plate shall be aluminum.
  - 2. Pressure plate shall be fastened to the mullion with stainless steel screws.
- F. Reinforcing Members:
  - 1. Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating.
  - 2. Reinforcing members must provide sufficient strength to withstand the design pressure indicated.
- G. Sealant:
  - 1. For sealants required within fabricated curtain wall system, provide permanently elastic, non-shrinking, and non-migrating type recommended by sealant manufacturer for joint size and movement.
- H. Thermal Barrier:
  - 1. Thermal separator shall be extruded of a silicone compatible elastomer that provides a minimum 1/4" (6.3 mm) separation.
- I. Tolerances:
  - 1. References to tolerances for wall thickness and other cross-sectional dimensions of glazed curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.

### **2.3 CURTAIN WALL FRAMING**

- A. Framing Members:
  - 1. Manufacturer's standard extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads
  - 2. Glazing System: Four-sided captured

3. Glazing Plane: Front
- B. Glass:
  1. Insulating glass options:
    - a. 1"
    - b. 1-5/16"
- C. Brackets and Reinforcements:
  1. Manufacturer's standard high-strength aluminum with non-staining, non-ferrous shims for aligning system components.
- D. Framing Sealants:
  1. Shall be suitable for glazed aluminum curtain wall as recommended by sealant manufacturer.
- E. Fasteners and Accessories:
  1. Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories must be compatible with adjacent materials.
  2. Where exposed, fasteners and accessories shall be stainless steel.
- F. Perimeter Anchors:
  1. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.
- G. Packing, Shipping, Handling, and Unloading:
  1. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- H. Storage and Protection:
  1. Store materials so that they are protected from exposure to harmful weather conditions.
  2. Handle material and components to avoid damage.
  3. Protect material against damage from elements, construction activities, and other hazards before, during, and after installation.

## 2.4 GLAZING

- A. Glazing to meet requirements in Division 08 Glazing Section.
- B. Available Glazing Options:
  1. 1600 Wall System®1 Curtain Wall:
    - a. System depth: 6" or 7-1/2" for 1" insulating glazing and 1/4" monolithic glazing.
- C. Glazing Gaskets:
  1. Gaskets to meet requirements of ASTM C864.
- D. Spacers and Setting Blocks:
  1. Manufacturer's standard elastomeric type.
- E. Bond-Breaker Tape:



1. Manufacturer's standard TFE-fluorocarbon or polyethylene material to which sealants will not develop adhesion.

F. Glazing Sealants:

1. As recommended by manufacturer for joint type.

## **2.5 OPERABLE UNITS**

A. Doors comply with Division 08 Aluminum-Framed Entrances and Storefronts Section.

B. Windows comply with Division 08 Aluminum Windows Section.

## **2.6 ACCESSORY MATERIALS**

A. Bituminous Paint:

1. Cold-applied asphalt-mastic paint.
2. Complies with SSPC-Paint 12 requirements except containing no asbestos.
3. Formulated for 30-mil thickness per coat.

## **2.7 FABRICATION**

A. Extrude or form aluminum shapes before finishing.

B. Fabricate components that, when assembled, have the following characteristics:

1. Profiles that are sharp, straight, and free of defects or deformations
2. Accurately fitted joints
3. Physical and thermal isolation of glazing from framing members
4. Accommodations for thermal and mechanical movements of glazing and framing that maintain required glazing edge clearances
5. Provisions for field replacement of glazing from exterior.
6. Fasteners, anchors, and connection devices that are concealed from view to the greatest extent possible.
7. Internal weeping system or other means to drain water passing joints, condensation occurring within framing members, and moisture migrating within glazed aluminum curtain wall to exterior.

C. Curtain Wall Framing:

1. Fabricate components for assembly using shear block system following manufacturer's standard installation instructions.

D. After fabrication, clearly mark components to identify their locations in project according to shop drawings.

## **2.8 ALUMINUM FINISHES**

- A. Finish designations that are prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. Factory Finishing:
  - 1. Kawneer Permanodic® AA-M10C21A44, AAMA 611, Architectural Class I Color Anodic Coating (Color: White). Match color on existing windows.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. With installer present, examine areas for compliance with requirements for installation tolerances and other conditions affecting performance of the work.
- B. Proceed with installation only after correcting unsatisfactory conditions.

### **3.2 INSTALLATION**

- A. Curtain Wall System Installation:
  - 1. Install curtain wall systems plumb, level, and true to line, without warp or rack of frames, within manufacturer's prescribed tolerances, and complying with installation instructions.
  - 2. Provide support and anchor in place.
  - 3. Dissimilar Materials:
    - a. Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
  - 4. Glazing:
    - a. Glass shall be outside-glazed.
    - b. Glass shall be held in place with extruded aluminum pressure plates anchored to the mullion using stainless steel fasteners that are spaced no more than 9" on center.
  - 5. Water Drainage
    - a. Each light of glass shall be compartmentalized using joint plugs and silicone sealant to divert water to the horizontal weep locations.
    - b. Weep holes shall be located in the horizontal pressure plates and covers to divert water to the exterior of the building.

### **3.3 FIELD QUALITY CONTROL**

- A. Field Tests:
  - 1. Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter-caulked, and cured.
  - 2. Conduct tests for air infiltration and water penetration with manufacturer's representative present.
  - 3. Tests that do not meet the specified performance requirements and units that have deficiencies shall be corrected as part of the contract amount.

4. Testing shall be performed per AAMA 503 by a qualified independent testing agency. Refer to Testing Section for payment of testing and testing requirements.
  5. Air Infiltration Tests:
    - a. Conduct tests in accordance with ASTM E 783.
    - b. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft<sup>2</sup>, whichever is greater.
  6. Water Infiltration Tests:
    - a. Conduct tests in accordance with ASTM E 1105.
    - b. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 psf (383 Pa).
- B. Manufacturer's Field Services:
1. Upon owner's written request, provide periodic site visit by manufacturer's field service representative.

### **3.4 ADJUSTING, CLEANING, AND PROTECTION**

- A. Adjusting: Not applicable.
- B. Protection:
1. Protect installed product's finish surfaces from damage during construction.
  2. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.
- C. Cleaning:
1. Repair or replace damaged installed products.
  2. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.
  3. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during the construction period.
  4. Remove construction debris from project site and legally dispose of debris.

**END OF SECTION 084413**

## SECTION 087173

### DETENTION DOOR HARDWARE

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

###### A. Section Includes

1. Supply and Install all hardware necessary for all doors, also hardware as specified herein and as enumerated in "Set Numbers" and as indicated and required by actual conditions at the building. The hardware shall include the furnishing of all necessary screws, special screws, bolts, special bolts, expansion shields, drop plates, and all other devices necessary for the proper application of the hardware.
2. The hardware supplier shall include the connections of low voltage plug connectors only. Power, conduit, low voltage wire to hardware components and connection to plug connector and connection back the door control system is by electrical section/ Division 26.
3. Division 26 to provide high voltage conduit, wiring to door opening or power supplies including conduits to hardware location.

###### B. Related Sections

###### B. Related Sections

- |     |                    |   |
|-----|--------------------|---|
| 1.  | Section 033000:    | Cast in Place Concrete.                   |
| 2.  | Section 042200:    | Concrete Unit Masonry.                    |
| 4.  | Section 051200:    | Structural Steel.                         |
| 5.  | Section 061000:    | Rough Carpentry.                          |
| 6.  | Section 081113:    | Hollow Metal Doors and Frames.            |
| 7.  | Section 081115:    | Detention Hollow Metal Sliding Doors      |
| 7.  | Section 081115.13: | Detention Hollow Metal Doors and Windows. |
| 8.  | Section 087100:    | Door Hardware.                            |
| 10. | Section 099123:    | Interior Painting.                        |
| 11. | Section 130713.16: | Bullet Resistant Security Glazing.        |
| 12. | Division 26:       | Electrical wiring.                        |

##### 1.3 REFERENCES

- A. Standard hardware location dimensions in accordance with American National Standards Institute and Builders Hardware Manufacturers Association
- B. American National Standards Institute (ANSI) and Builders Hardware Manufacturers Association

(BHMA).

1. ANSI/BHMA A156.2-96- Bored and Preassembled Locks and Latches.
2. ANSI/BHMA A156.1-00- Butts and Hinges.
3. ANSI/BHMA A156.3-94- Exit Devices.
4. ANSI/BHMA A156.4-00- Door Controls (Closers).
5. ANSI/BHMA A156.5-92- Auxiliary Lock and Associated Products.
6. ANSI/BHMA A156.6-94- Architectural Door Trim.
7. ANSI/BHMA A156.8-00- Door Controls – Overhead Holders
8. ANSI/BHMA A156.16-97- Auxiliary Hardware.
9. ANSI/BHMA A156.18-00- Materials and Finishes.
10. ANSI/BHMA A156.21-96- Thresholds.
11. ANSI/BHMA A156.26-00- Continuous Hinges.
12. ANSI/BHMA A156.28-00- Master Keying

#### **1.4 SUBMITTALS**

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification sections.
- B. Catalog Cuts: Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. Final Hardware Schedule Content: Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:
  - Type, style, function, size, and finish of each hardware item.
  - Name and manufacturer of each item.
  - Fastenings and other pertinent information.
  - Location of each hardware set cross-referenced to indications on Drawings.
  - Explanation of all abbreviations, symbols, and codes contained in schedule.
  - Mounting locations for hardware.
  - Door and frame sizes and materials.
  - Name and phone number for the local manufacturer's representative for each product.
- D. Key Schedule: After a keying meeting between representatives of the Owner, Architect, and the

Hardware Supplier, provide a keying schedule, listing the levels of keying, as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. This schedule can be submitted as a part of the Hardware Schedule or as a separate schedule.

- E. Samples: If requested by the architect, submit samples of each type of exposed hardware unit in finish indicated and tagged with full description for coordination with schedule.
- Samples will be returned to the supplier in like-new condition. Units that are acceptable may, after final check of operations, be incorporated in the Work, within limitations of key coordination requirements.
- F. Templates: After final approval of the hardware schedule, provide templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware.
- G. Wiring Diagrams: After final approval of the hardware schedule, submit wiring diagrams as required for the proper installation of all electrical, electro-mechanical, and/or electro-magnetic products.
- H. Notes:
- Hardware will not be ordered until a corrected copy of the schedule is returned to the hardware supplier after being reviewed by the specification writer, and bearing the approval of the architect.
  - The architect's approval of the hardware schedule shall not be construed as certifying that the list is complete. Quantities listed in any instance are for supplier convenience only and are not guaranteed. It is the responsibility of the Hardware Supplier to furnish the proper hardware that is required for all openings, whether or not herein listed. Acceptance of the hardware schedule does not relieve supplier of responsibility for errors or omissions.

## **1.5 QUALITY ASSURANCE**

- A. Substitutions: Products are to be those specified to insure a uniform basis of acceptable materials. Requests for substitutions will require architectural approval and must be made in writing 10 days prior to bid date to allow architect to issue an addendum. If proposing a substitute, submit that product data attached to product data for the specified item and indicate basis for substitution and savings to be made. Provide sample if requested. No other substitutions will be allowed. Certain products have been selected for their unique characteristics and particular project suitability.
- Items specified as "no substitution" shall be provided exactly as listed.
  - Items listed with no substitute manufacturers have been requested by Owner/Architect to match existing for continuity and/or future performance and maintenance standards or because there is no known equal product.
- B. Supplier and Installer Qualifications:
- A recognized architectural hardware supplier, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an accredited Architectural Hardware Consultant (AHC), who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work for consultation.
  - Qualified personnel with minimum 5 years documented experience in installing security hardware of similar type & size of installation.

- C. Single Source Responsibility: Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer.
- D. Fire-Rated Openings: Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by Underwriters Laboratories, Warnock Hersey, Factory Mutual, or other testing and inspecting organization acceptable to the authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.
- D. Electronic Security Hardware: When electrified hardware is included in the hardware specification, the hardware supplier must employ an individual knowledgeable in electrified components and systems, who is capable of producing wiring diagrams and consulting as needed. Coordinate installation of the electronic security hardware with the Architect and electrical engineers and provide installation and technical data to the Architect and other related sub-contractor. Upon completion of electronic security hardware installation, verify that all components are working properly, and state in the required guarantee that this inspection has been performed.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Each article of hardware shall be individually packaged in manufacturer's original container.
- C. The hardware, upon delivery, shall be jointly inventoried by representatives of both the Contractor and the Hardware Supplier. Any irregularities shall be noted at that time and future shortages shall be replaced at the expense of the Contractor.
- D. Contractor will provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items so that completion of the Work will not be delayed by hardware losses both before and after installation.
- E. Items damaged in shipment shall be replaced promptly and with proper material and paid for by whom-ever did the damage or caused the damage to occur.
- F. All the hardware shall be handled at this project in a manner to avoid damage, marring or scratching. Any irregularities that occur to the hardware after it has been delivered to the project shall be corrected, replaced or repaired by the Contractor at their expense. All hardware items shall be protected against malfunction due to paint, solvent, cleanser or any chemical agent.
- G. No direct shipments will be allowed unless approved in writing by the Contractor.

#### **1.7 WARRANTY**

- A. Starting date for all warranty periods to be date of substantial completion.
- B. No liability is to be assumed where damage or faulty operation is due to improper installation, improper usage or abuse.
- C. Provide guarantee from hardware supplier as follows:
  - Closers: Ten years, except electronic closers, two years.
  - Exit Devices: Three years, except electrified devices, 1 year.

- Hinges: Life of the building.
- All other Hardware: One year.

D. Products judged to be defective during the warranty period shall be replaced or repaired in accordance with the manufacturer's warranty, at no cost to the owner.

## **1.8 MAINTENANCE**

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

## **PART 2 - PRODUCTS**

### **2.1 HARDWARE ITEMS**

A. Use one manufacturer's products only for all similar items.

### **2.2 DOOR HARDWARE**

A. Door Closers:

1. ANSI A156.4, Grade 1, non-handed, cast aluminum body, standard arm, drop plate where listed, sprayed AL finish, sized as listed, for interior and exterior use. Screws to be Torx machine security screws.

- Acceptable materials are: LCN 4041 x TB or approved equal.

B. Holders and Stops: to ANSI A156.16, as listed in hardware schedule.

1. Wall stops: to ANSI/BHMA A156.8, solid cast brass or bronze, circular shape, rubber insert, finish stainless steel.

- Acceptable materials are: Gallery Hardware 250B or approved equal.

4. Floor stops: 2" x 3 1/2" full spherical radius Heavy duty Silicone rubber door stop (can be mounted to floor or walls).

- Acceptable materials are: Folger Adam 420 Detention door stop.

3. Overhead Stops: devices to ANSI/BHMA A156.8, heavy duty, non friction stop type, concealed, heavy duty tempered steel spring, non-handed, sized for door leaf width, finish to be stainless steel.

- Acceptable materials are: Glynn Johnson GJ 100S overhead stop or approved equal.

C. Auxiliary hardware:

1. Door Pull: to ANSI/BHMA A156.6, 25.4mm diameter stainless steel finish (US32D) or to match existing, c/w security fasteners.

- Acceptable materials are: Folger Adam No. 2 or approved equal.

- 1.A Flush pull: Rugged cast flush cup door pulls that provide limited purchase on one or both sides of



a door c/w security fasteners

- Acceptable materials are: Folger Adam No. 4-1s or approved equal.
2. Thresholds: to ANSI A156.21, 5" wide x full width of door opening, extruded aluminum, mill finish, with PVC Frost barrier.
    - Acceptable materials are: KN Crowder CT45 or approved equal.
  3. Weatherstripping: Head and jamb seal: extruded aluminum frame and hollow cell neoprene insert, clear anodized finish.
    - Acceptable materials are: KN Crowder W13.
  4. Door Sweep: To ANSI A156. Full width of door, brush type, extruded aluminum mill finish.
    - Acceptable materials are: KN Crowder W24S.

## **2.3 DOOR HARDWARE DETENTION**

### **A. Security Lock:**

1. Motorized electromechanical pin-tumbler security deadlatch for swinging doors, (Medium to Maximum Security) keyed one or two sides, Mogul cylinder (s). Stainless steel latchbolt deadlocks automatically when door is in closed position, latch can be retracted (unlocked) manually by key or electrically by low voltage motor through a switching device, lock status switch integrated. Standard 120VAC. Optional: DC Rectifier (FC), 24VDC motor, Maintained Switch Latch Holdback (MSLH), Key Cylinder Extension (KCE) for keyed both sides,.
  - Acceptable materials are: 120 series as manufactured by Folger Adam, Cylinder by Mogul Systems.
2. High Security Pin Tumbler, mechanical lock for swinging doors (Medium to Maximum Security) keyed one or two sides, Paracentric cylinder (s). Stainless steel latchbolt deadlocks automatically when door is in closed position.
  - Acceptable materials are: 60 series as manufactured by Folger Adam.

**B.1 Butts and hinges:** to CGSB-69.18, meeting ANSI Standards for performance, non-removable pins, with safety studs projecting into door frame and door (RSS), 114 x 114 x 4.75mm, 8mm pin diameter, hospital tip, numerical identifiers followed by size, options and finish in listing.

- Acceptable materials are: 4- 1/2FM-ICS by Southern Folger or approved equal.

**B.2 #5 Heavy Prison hinges:** To be supplied with bolt holes to be bolted to both door & frame on site, 5" x 6" x 1/2" thick. USP Primed.

**B.3 #3FP Heavy Prison hinges:** To be supplied with forged built in stop 3/8"- 16 x 3/4" flat head security screws. 3"x 4"x 3/8" thick. USP Primed.

**C. Electronic Door Position Switch:** Mortised, concealed electrical leads, single-pole double-throw switch, shock and moisture proof.

- Acceptable materials are: ASSA – 105A Folger Adam or approved equal.

- D. Control Console: Provide (1) control console custom built to suite site conditions, as per Door control system attached.
- Acceptable materials are: Digicon8 or approved equal distributed by Apex Industries Inc. Apex Industries Inc- (800) 268-3331 or via Email: [djgallant@apexindustries.com](mailto:djgallant@apexindustries.com).
- E. Key cabinet – To be designed to accommodate the larger Paracentric or mogul keys. Cabinet to be capable of storing over 50 keys, and a minimum of 1-Hand cuff shelf. To be secured with a #17 Mechanical lock by.Folger Adam.
- Acceptable Materials are: Apex 50KC by Apex Industries Inc. or approved equal. Apex Industries Inc- (800) 268-3331 or via Email: [djgallant@apexindustries.com](mailto:djgallant@apexindustries.com).

## 2.4 FASTENINGS

1. Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.
2. All screw type fasteners for application of hardware items except those to be welded, shall be “Security Torx” type of the size and length as recommended by the manufacturer. Supply 2-10mm drive socket wrenches for each size for maintenance purposes.
3. Exposed fastening devices to match finish of hardware.
4. Use fasteners compatible with material through which they pass.

## 2.5 KEYING

- A. Mogul System:
1. Cores, cylinders and keying by lock manufacturer as continuation of current institution key groups.
  2. Provide 3 keys per lock, keyed as directed.

## 2.6 MANUFACTURER LIST

- A. List of manufacturers used in hardware sets:

Hinges	Southern Folger (Folger Adam Hardware)
Locks	Southern Folger (Folger Adam Hardware)
Pulls	Southern Folger (Folger Adam Hardware)
DPS	Southern Folger (Folger Adam Hardware)
OH Stop	Glynn Johnson or approved equal
Closers	LCN or approved equal
Weather strip	KN.Crowder or approved equal
Threshold	KN.Crowder or approved equal

PROPOSED RENOVATION & ADDITION  
COLUMBIA COUNTY JUSTICE CENTER  
EVANS, GEORGIA

Door Sweep	KN.Crowder or approved equal
Wall Stop	Gallery Specialty Hardware or approved equal
Floor Stop	Southern Folger (Folger Adam Hardware) or approved equal

Hardware listing: (THESE ARE EXAMPLE SETS- WILL VARY BASED ON PROJECT REQUIREMENTS)

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Hardware Set No 1

Doors included: Sliding CELL DOORS

Doors # 2128, 2129

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1 Only 102A Type track set	Primed
1 Only F/A 30/32 Deadlatches	Primed
1 Only F/A 212C Raised Pull	STNLS
1 Only F/A214S Recessed Pull	STNLS
1 Only Paracentric Key	

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Hardware Set No 2

Doors included: Electro-Mechanical MOVEMENT DOORS

Doors # B001, B002, 2124, 2125

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3 Only F/A 204FM-SS Det. Grade Mortise Hinges	STNLS
1 Only Folger Adam 120E/126 x 120VAC	26D
2 Only F/A212C Raised Pull	STNLS
1 only F/A 200MRS Door Position Switch	
1 Only Paracentric Key	

WHEN REQUIRED:

1 Only F/A 450 Heavy duty wall or floor Stop	Rubber
1 Only LCN 2010 Conc. Closer	AL
1 Only KN. Crowder W13 Weather strip	AL
1 Only KN. Crowder CT45 Threshold	AL
1 Only KN. Crowder W24S Door Sweep	AL

Hardware Set No 3

Doors included: Electro-Mechanical MOVEMENT DOORS

Doors # B005

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3 Only F/A 204FM-SS Det. Grade Mortise Hinges	STNLS
1 Only Folger Adam 120ED/126 x 120VAC	26D
2 Only F/A212C Raised Pull	STNLS
1 only F/A 200MRS Door Position Switch	
1 Only Paracentric Key	

WHEN REQUIRED:

1 Only F/A 450 Heavy duty wall or floor Stop	Rubber
1 Only LCN 2010 Conc. Closer	AL
1 Only KN. Crowder W13 Weather strip	AL
1 Only KN. Crowder CT45 Threshold	AL
1 Only KN. Crowder W24S Door Sweep	AL

Hardware Set No 4

Doors included: -Swinging Doors

Doors # 1043

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3 Only F/A 204FM-SS Det. Grade Mortise Hinges	STNLS
1 Only Folger Adam D9305 x 120VAC Maxi-Mortise	26D
2 Only F/A 212C Raised Pull	STNLS

1 only F/A 200MRS Door Position Switch

1 Only Paracentric Key

WHEN REQUIRED:

1 Only F/A 450 Heavy duty wall or floor Stop	Rubber
1 Only LCN 2010 Conc. Closer	AL
1 Only KN. Crowder W13 Weather strip	AL
1 Only KN. Crowder CT45 Threshold	AL
1 Only KN. Crowder W24S Door Sweep	AL

Hardware Set No 5

: CONTROL CONSOLE

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1 Only Apex 8 Control console	STNLS
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Hardware Set No 6 : KEY CABINET

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1 Only Apex Industries Inc.-APEX50KC	PRIMED
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### PART 3 – EXECUTION

#### 3.1 INSTALLATION INSTRUCTIONS

3. Furnish metal frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.
2. Furnish manufacturers instructions for proper installation of each hardware component.
3. Install security hardware to manufacturers printed instructions using security screws/bolts to ensure penitentiary standards. Commission all hardware to function properly as designed and submit list of completed installation checks, repair and final condition.

**END OF SECTION 087173**

## SECTION 088000

### GLAZING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Glass products.
  - 2. Insulating glass.
  - 3. Glazing sealants.
  - 4. Glazing tapes.
  - 5. Miscellaneous glazing materials.
- B. Related Requirements:
  - 1. Section 081113 "Hollow Metal Doors & Frames"
  - 2. Section 081213 "Hollow Metal Frames" for glazing in interior hollow metal windows and door glass kits.
  - 3. Section 081416 – "Flush Wood Doors" for glazing for door glass kits.
  - 4. Section 084313 – "Aluminum Framed Storefronts for glazing in exterior aluminum framed storefronts.
  - 5. Section 084413 – "Glazed Aluminum Curtain Walls",
  - 6. Section 088000.13 "Security Glazing."

##### 1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.
- C. IBC: International Building Code.
- D. Interspace: Space between lites of an insulating-glass unit.

##### 1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

##### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of the following products; 12 inches square.
  - 1. Insulating glass.
  - 2. Spandrel glass.

3. Opaque glass.

- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

#### **1.6 INFORMATIONAL SUBMITTALS**

A. Qualification Data: For Installer.

B. Product Certificates: For glass.

C. Product Test Reports: For fabricated glass and glazing sealants, for tests performed by a qualified testing agency.

1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Sample Warranties: For special warranties.

#### **1.7 QUALITY ASSURANCE**

A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved by primary glass manufacturer.

B. Installer Qualifications: A qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.

#### **1.8 PRECONSTRUCTION TESTING**

A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.

#### **1.9 DELIVERY, STORAGE, AND HANDLING**

A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

#### **1.10 FIELD CONDITIONS**

A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

## 1.11 WARRANTY

- A. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: Twenty (20) years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
1. For monolithic-glass lites, properties are based on units with lites 1/4 inches thick.
  2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.

### 2.2 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.

### 2.3 GLASS PRODUCTS

- A. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.
- B. Opaque Annealed Float Glass: ASTM C1036, Type I, Class 1 (opaque), Quality-Q3. One way glass location.
- C. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) as indicated, Quality-Q3.
- D. Ceramic-Coated Spandrel Glass: ASTM C1048, Type I, Condition B, Quality-Q3.
- E. Silicone-Coated Spandrel Glass: ASTM C1048, Type I, Condition C, Quality-Q3.



## 2.4 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.
  - 1. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
  - 2. Perimeter Spacer: Manufacturer's standard spacer material and construction

## 2.5 GLAZING SEALANTS

- A. General:
  - 1. Compatibility: Compatible with one another and with other materials they contact, including glass products, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  - 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
  - 3. Colors of Exposed Glazing Sealants: As indicated by manufacturer's designations.
- B. Neutral-Curing Silicone Glazing Sealant, Class 100/50: Complying with ASTM C920, Type S, Grade NS, Use NT.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. GE Construction Sealants; Momentive Performance Materials Inc.
    - b. Pecora Corporation.
    - c. Sika Corporation.

## 2.6 GLAZING TAPES

- A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
  - 1. AAMA 804.3 tape, where indicated.
- B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:
  - 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
  - 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

## 2.7 MISCELLANEOUS GLAZING MATERIALS

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

- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks:
  - 1. Neoprene with Shore A durometer hardness of 85, plus or minus 5.
  - 2. Type recommended in writing by sealant or glass manufacturer.
- D. Spacers:
  - 1. Neoprene blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
  - 2. Type recommended in writing by sealant or glass manufacturer.
- E. Edge Blocks:
  - 1. Neoprene with Shore A durometer hardness per manufacturer's written instructions.
  - 2. Type recommended in writing by sealant or glass manufacturer.

## **2.8 FABRICATION OF GLAZING UNITS**

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
  - 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
  - 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
  - 2. Presence and functioning of weep systems.
  - 3. Minimum required face and edge clearances.
  - 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

### **3.3 GLAZING, GENERAL**

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

PROPOSED RENOVATION & ADDITION  
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- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.
  - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
  - 2. Provide 1/8-inch-minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Where edge shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

### **3.4 TAPE GLAZING**

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Apply heel bead of elastomeric sealant.

- G. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- H. Apply cap bead of elastomeric sealant over exposed edge of tape.

### **3.5 GASKET GLAZING (DRY)**

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

### **3.6 SEALANT GLAZING (WET)**

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

### **3.7 CLEANING AND PROTECTION**

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
  - 1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.

- D. Wash glass on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer.

### **3.8 MONOLITHIC GLASS SCHEDULE**

- A. Clear Glass Type: Fully tempered float glass. As indicated on Drawings – Interior hollow metal windows and glass kits..
  - 1. Minimum Thickness: 1/4 inches thick.
  - 2. Safety glazing required.
- B. Ceramic-Coated Spandrel Glass Type Fully tempered float glass.
  - 1. Glass: Clear float glass.
    - 2. Coating Color: As selected by Architect from manufacturer's full range. .
  - 3. Minimum Thickness: 1/2 inch.
  - 4. Coating Location: Second surface.
- C. Silicone-Coated Spandrel Glass Type Fully tempered float glass.
  - 1. Glass: Clear float glass.
  - 2. Coating Color: As selected by Architect from manufacturer's full range.
  - 3. Minimum Thickness: 1/2 inch.
  - 4. Coating Location: Second surface.

### **3.9 INSULATING GLASS SCHEDULE**

- A. Low-E-Coated, Clear Insulating Glass Type: Exterior aluminum framed storefronts windows and doors.:
  - 1. Overall Unit Thickness: 1-3/4 inch.
  - 2. Minimum Thickness of Each Glass Lite: 1/2 - 3/4 inch.
  - 3. Outdoor Lite: Annealed float glass.
  - 4. Interspace Content: Argon.
  - 5. Indoor Lite: Annealed float glass.
  - 6. Low-E Coating: Manufacturer's standard coating on each surface.
  - 7. U-Factor: 0.30maximum.
  - 8. SGHC: 0.21 maximum.

**END OF SECTION 088000**



# SPECIFICATION SHEETS

U. S. Security Systems, Inc.

## SECTION 088000.13

### SECURITY GLAZING

<b>PRODUCT NAME:</b>	<b>3/4" Clear Secur-Tem + Poly® SP019</b>	
<b>PRODUCT CODE:</b>	SP019	
<b>PERFORMANCE TESTING:</b>	Forced Entry:	H.P. White Level IV-TP-0500.03 ASTM 1915 Grade 2 WMFL Level III
	Ballistic:	H.P. White Levels A and B-TP-0500.02 38 Special handgun, 3 shots in an 8" Circle, 158 grain lead, 20 feet. .9mm handgun, 124 grain lead, FMJ caliber, 25 feet. Spall with no penetration.
<b>CONSTRUCTION:</b>	1/8" Clear Heat Strengthened .050" urethane 1/4" Polycarbonate .025" urethane 1/8" Polycarbonate .050" urethane 1/8" Clear Heat Strengthened	
<b>THICKNESS:</b>	.7125" Nominal	
<b>THICKNESS TOLERANCE:</b>	.647" / .778"	
<b>WEIGHT:</b>	6.1 Lbs. / Square Foot	
<b>MAXIMUM SIZE:</b>	60" x 96"	
<b>OPTIONS:</b>	Tinted glass, transparent mirror, reflective glass, wire glass, Low E glass, insulated units. (The use of some options may alter product thickness)	
<b>TECHNICAL DATA:</b>	U-Value	.75
	Shading Co-efficient	.81
	Light Transmission	.73
<b>APPLICABLE STANDARDS:</b>	ANSI Z97.1	ASTM C 1349
	CPSC 16 CFR 1201 (Category I and II)	ASTM C 1422
	ASTM C 1036	ASTM C 1048
<b>SINGLE RESPONSIBILITY:</b>	Global Security Glazing products are covered by our Single Responsibility® Program that ensures one firm has handled and is accountable for all phases of manufacturing.	
<b>INSTALLATION:</b>	All glass should be installed in accordance with the guidelines set forth in the current edition of the Glass Association of North America (GANA) Glazing and Sealant Manuals. Glazing systems should incorporate a weep system to allow moisture and water to escape the glazing channel.	
	Recommended Clearance: Face: 1/8" per side Edge: 1/4" Bite: 1"	

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**SECTION 090190.52**

**MAINTENANCE REPAINTING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes maintenance repainting as follows:
  - 1. Removing existing paint.
  - 2. Patching substrates.
  - 3. Repainting, including staining and varnishing of wood.
  
- B. Related Requirements:
  - 1. Section 013516 "Alteration Project Procedures" for general remodeling, renovation, repair, and maintenance requirements.
  - 2. Section 040110 "Masonry Cleaning" for cleaning and removing paint from masonry.
  - 3. Section 050170.51 "Decorative Metal Cleaning" for cleaning and removing paint from decorative metal.
  - 4. Section 099113 "Exterior Painting,"
  - 5. Section 099123 "Interior Painting,"
  - 6. Section 099300 "Staining and Transparent Finishing,"

**1.3 DEFINITIONS**

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.
- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.
- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.
- H. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
- I. Medium-Pressure Spray: 400 to 800 psi; 4 to 6 gpm.



#### **1.4 SEQUENCING AND SCHEDULING**

- A. Perform maintenance repainting in the following sequence, which includes work specified in this and other Sections:
  - 1. Dismantle existing surface-mounted objects and hardware except items indicated to remain in place. Tag items with location identification and protect.
  - 2. Verify that temporary protections have been installed.
  - 3. Examine condition of surfaces to be painted.
  - 4. Remove existing paint to the degree required for each substrate and surface condition of existing paint.
  - 5. Apply paint system.
  - 6. Reinstall dismantled surface-mounted objects and hardware unless otherwise indicated.

#### **1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include recommendations for product application and use.
  - 2. Include test data substantiating that products comply with requirements.
- B. Samples: For each type of paint system and each pattern, color, and gloss; minimum 6 inches long in least dimension, but not less than whole pattern].
  - 1. For each painted color being matched to a standardized color-coding system, include the color chips from the color-coding-system company with Samples.
  - 2. Label each Sample for location and application.
  - 3. Sample Size:
    - a. Painted Surfaces: 4-by-8-inch Samples for each color and material, on hardboard.
- C. Product List: For each paint product indicated, include the following:
  - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 2. Printout of current "MPI Approved Products List" for each MPI-product category specified in paint systems, with the proposed product highlighted.
  - 3. VOC content.

#### **1.6 INFORMATIONAL SUBMITTALS**

- A. Color Matching Certificate: For computer-matched colors.

#### **1.7 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra paint materials, from the same production run, that match products applied and that are packaged with protective covering for storage and identified with labels describing contents, including material, finish, source, and location on building.
  - 1. Quantity: Furnish Owner with an additional 5percent, but not less than 1 gal. or one case, as appropriate, of each material and color applied.

#### **1.8 QUALITY ASSURANCE**

- A. Color Matching: Custom computer-match paint colors to colors indicated on Drawings

## 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste daily.

## 1.10 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

## PART 2 - PRODUCTS

### 2.1 PREPARATORY CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F.
- C. Detergent Solution: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent that contains no ammonia, 5 quarts of 5 percent sodium hypochlorite bleach, and 15 quarts of warm water for every 5 gal. of solution required.
- D. Mildewcide: Commercial proprietary mildewcide or a job-mixed solution prepared by mixing 1/3 cup of household detergent that contains no ammonia, 1 quart of 5 percent sodium hypochlorite bleach, and 3 quarts of warm water.
- E. Abrasives for Ferrous Metal Cleaning: Aluminum oxide paper, emery paper, fine steel wool, steel scrapers, and steel-wire brushes of various sizes.
- F. Low-Odor, Solvent-Type Paste Paint Remover: Manufacturer's standard low-odor, water-rinsable, solvent-type paste, gel, or foamed emulsion formulation for removing paint from masonry, stone, wood, plaster, or metal as required to suit Project; and containing no methanol or methylene chloride.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. PROSOCO, Inc.

### 2.2 PAINT, GENERAL

- A. Material Compatibility:
  - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Colors: As indicated on Drawings.

**2.3 PAINT MATERIALS, GENERAL**

- A. Transition Coat: Paint manufacturer's recommended coating for use where a residual existing coating is incompatible with the paint system.

**2.4 PAINT MATERIAL MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - 1. Benjamin Moore & Co.
  - 2. Sherwin -Williams Company.

**2.5 PAINT MATERIALS**

- A. Primers and Sealers:
  - 1. Primer Sealer, Latex, Interior:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.
  - 2. Primer Sealer, Alkyd, Interior:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.
  - 3. Stain, Semi-Transparent, for Interior Wood:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.
- B. Water-Based Paints:
  - 1. Latex, Exterior Flat (Gloss Level 1):
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.
  - 2. Latex, Exterior Low Sheen (Gloss Levels 3-4)
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.
  - 3. Latex, Exterior Semigloss (Gloss Level 5):
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.

- C. Solvent-Based Paints:
  - 1. Alkyd, Interior, Semigloss (Gloss Level 5):
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company
- D. Solvent-Based Varnishes:
  - 1. Varnish, Interior, Semigloss (Gloss Level 5):
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.
- E. Epoxy Coatings:
  - 1. Epoxy, Gloss
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.

### **PART 3 - EXECUTION**

#### **3.1 PROTECTION**

- A. Comply with each manufacturer's written instructions for protecting surfaces against damage from exposure to its products. Prevent chemical solutions from coming into contact with people, and other surfaces that could be harmed by such contact.
  - 1. Cover adjacent surfaces with materials that are proven to resist chemical solutions being used unless the solutions will not damage adjacent surfaces. Use protective materials that are UV resistant and waterproof. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
  - 2. Neutralize and collect alkaline and acid wastes before disposal.

#### **3.2 MAINTENANCE REPAINTING, GENERAL**

- A. Maintenance Repainting Appearance Standard: Completed work is to have a uniform appearance as viewed by Architect from building interior at 5 feet away from painted surface.
- B. Execution of the Work: In repainting surfaces, disturb them as minimally as possible and as follows:
  - 1. Remove failed coatings and corrosion and repaint.
  - 2. Verify that substrate surface conditions are suitable for repainting.
  - 3. Allow other trades to repair items in place before repainting.

- C. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use gentle methods, such as scraping and lightly hand sanding, that will not abrade softer substrates, reducing clarity of detail.
- D. Heat Processes: Do not use torches, heat guns, or heat plates.

### **3.3 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of painting work. Comply with paint manufacturer's written instructions for inspection.
- B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
  - 1. If existing surfaces cannot be prepared to an acceptable condition for proper finishing by using specified surface-preparation methods, notify Architect in writing.
- C. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
  - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

### **3.4 PREPARATORY CLEANING**

- A. General: Use the gentlest, appropriate method necessary to clean surfaces in preparation for painting. Clean all surfaces, corners, contours, and interstices.
- B. Detergent Cleaning: Wash surfaces by hand using clean rags, sponges, and bristle brushes. Scrub surface with detergent solution and bristle brush until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet. Rinse with water applied by clean rags or sponges.
- C. Mildew: Clean off existing mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. Scrub mildewed areas with mildewcide. Rinse with water applied by clean rags or sponges.

### **3.5 SUBSTRATE REPAIR**

- A. General: Repair substrate surface defects that are inconsistent with the surface appearance of adjacent materials and finishes.
- B. Wood Substrate:
  - 1. Repair wood defects including dents and gouges more than 1/8 inch in size and all holes and cracks by filling with wood-patching compound and sanding smooth. Reset or remove protruding fasteners.
  - 2. Where existing paint is allowed to remain, sand irregular buildup of paint, runs, and sags to achieve a uniformly smooth surface.
- C. Gypsum-Plaster and Gypsum-Board Substrates:
  - 1. Repair defects including dents and chips more than 1/4 inch in size and all holes and cracks by filling with gypsum-plaster patching compound and sanding smooth. Remove protruding fasteners.

2. Rout out surface cracks to remove loose, unsound material; fill with patching compound and sand smooth.

D. Metal Substrate:

1. Preparation: Treat repair locations by wire-brushing and solvent cleaning. Use chemical or mechanical rust removal method to clean off rust.
2. Defects in Metal Surfaces: Repair non-load-bearing defects in existing metal surfaces, including dents and gouges more than 1/8 inch deep or 1/2 inch across and all holes and cracks by filling with metal-patching compound and sanding smooth. Remove burrs and protruding fasteners.
3. Priming: Prime iron and steel surfaces immediately after repair to prevent flash rusting. Stripe paint corners, crevices, bolts, welds, and sharp edges. Apply two coats to surfaces that are inaccessible after completion of the Work.

### 3.6 PAINT APPLICATION, GENERAL

- A. Comply with manufacturers' written instructions for application methods unless otherwise indicated in this Section.
- B. Prepare surfaces to be painted according to the Surface-Preparation Schedule and with manufacturer's written instructions for each substrate condition.
- C. Apply a transition coat over incompatible existing coatings.
- D. Blending Painted Surfaces: When painting new substrates patched into existing surfaces or touching up missing or damaged finishes, apply coating system specified for the specific substrate. Apply final finish coat over entire surface from edge to edge and corner to corner.

### 3.7 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.8 SURFACE-PREPARATION SCHEDULE

- A. General: Before painting, prepare surfaces for painting according to applicable requirements specified in this schedule.
  1. Examine surfaces to evaluate each surface condition according to paragraphs below.
  2. Where existing degree of soiling prevents examination, preclean surface and allow it to dry before making an evaluation.
  3. Repair substrate defects according to "Substrate Repair" Article.
- B. Surface Preparation for MPI DSD 0Degree of Surface Degradation:
  1. Surface Condition: Existing paint film in good condition and tightly adhered.
  2. Paint Removal: Not required.

3. Preparation for Painting: On existing painted substrate: Wash surface by detergent cleaning; use solvent cleaning where needed. Roughen or degloss cleaned surfaces to ensure paint adhesion according to paint manufacturer's written instructions. On existing stained substrate: Sand surface to prepare according to paint manufacturer's written instructions for substrate construction materials

### **3.9 EXTERIOR MAINTENANCE REPAINTING SCHEDULE**

- A. Ferrous Metal Substrates: [Iron railing and gate] <Insert item description or drawing designation, or both>:
  1. Alkyd System system over a transition coat.
    - a. Prime Coat: degree of surface degradation, spot prime with Primer, Metal, Surface Tolerant
    - b. Intermediate Coat: Alkyd, exterior, matching topcoat. >.
    - c. Topcoat: Alkyd, exterior, semigloss (Gloss Level 5)
    - d. Topcoat: Alkyd, exterior, gloss (Gloss Level 6)

### **3.10 INTERIOR MAINTENANCE REPAINTING SCHEDULE**

- A. Wood Trim, Doors Windows Frames and Moldings:
  1. Alkyd System: system over a transition coat.
    - a. Prime Coat: For stained substrates, fully prime coat with Undercoat, Alkyd , Interior.
    - b. Intermediate Coat: Alkyd, matching topcoat.
    - c. Topcoat: Alkyd, interior, semigloss (Gloss Level 5).
    - d. Color: Match Colors indicated on Drawings
- B. Wood Paneling, Casework and Millwork:
  1. Alkyd Varnish System over Stain
    - a. Prime Coat: For degree of surface degradation, touch up with topcoat.
    - b. Prime Coat: For degree of surface degradation, spot prime with Stain, Semi-Transparent, for Interior Wood.
    - c. Intermediate Coat: Interior varnish matching topcoat.
    - d. Topcoat: Varnish, interior, semigloss (Gloss Level 5.
    - e. ].
- C. Stain Color: Match color indicated on Drawings.

**END OF SECTION 090190.52**

**SECTION 090561.13**

**MOISTURE VAPOR EMISSION CONTROL**

**PART 1 GENERAL**

**1.1 SECTION INCLUDES**

- A. Moisture vapor emission control system for interior concrete slabs in preparation of floor covering installation, includes:
  1. Moisture vapor emission control solution.
  2. Bond promoter.

**1.2 RELATED SECTIONS**

- A. Section 033000 - Cast-in-Place Concrete.
- B. Division 9 Sections for floor coverings applied to concrete substrates.

**1.3 REFERENCES**

- A. ASTM International (ASTM):
  1. ASTM D7234 - Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
  2. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring.
  3. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
  4. ASTM F2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes.
  5. ASTM F3191 - Standard Practice for Field Determination of Substrate Water Absorption (Porosity) for Substrates to Receive Resilient Flooring.
- B. International Concrete Repair Institute (ICRI):
  1. ICRI Guide 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays and Concrete Repair.

**1.4 DEFINITIONS**

- A. MVE: Moisture vapor emission.
- B. MVER: Moisture vapor emission rate.

**1.5 SUBMITTALS**

- A. Product Data:
  1. Manufacturer's data sheets on each product to be used.
  2. Preparation instructions and recommendations.
  3. Storage and handling requirements and recommendations.
  4. Typical installation methods.



- B. Sustainable Design Submittals:
  - 1. Product Data: Indicating VOC content.
  - 2. Laboratory Test Reports: Indicating compliance with low-emitting material requirements.
- C. Quality Assurance Submittals:
  - 1. Qualification Data: For Applicator.
  - 2. Product Test Reports: For MVE-control system, indicating compliance with requirements.
  - 3. Field quality-control reports.

## 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section and employs technical-support personnel who are available for product training.
- B. Installer Qualifications: Company specializing in performing Work of this section and trained and approved by the manufacturer.
- C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle in strict compliance with manufacturer's written instructions and recommendations.

## 1.8 PROJECT 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 recommended limits.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
  - 1. ISE Logik Industries, which is located at: 14231 Seaway Rd. Suite 1003; Gulfport, MS 39503; Toll Free Tel: 877-549-5159; Tel: 585-474-3553; Email: [request info \(decraft@iselogik.com\)](mailto:requestinfo@decraft@iselogik.com); Web: <http://www.iselogik.com>
  - 2. Schönox, 511 Wilhite Street, Florence, AL 35630: Tel: 855-391-2649.
- B. Requests for substitutions will be considered in accordance with provisions of Section 0160 00 - Product Requirements.

### 2.2 MVE-CONTROL SYSTEMS

- A. Moisture Vapor Emission (MVE) Control Solution: A no limit moisture vapor emission control solution.
  - 1. Basis of Design:
    - a. MVEC-710; as manufactured by ISE Logik Industries, Inc.
    - b. Schönox EPA; as manufactured by Schönox.
  - 2. Approved for use with all flooring systems and types.
  - 3. No moisture testing required prior to use.

- B. Bond Promoter: A one-part next generation bond promoter surface texturizer, encapsulator, and pH barrier.
  - 1. Basis of Design: MVBP-600; as manufactured by ISE Logik Industries, Inc
  - 2. Designed for use over MVEC 710 moisture vapor emission control system.
  - 3. Evidences long-term resistance to water and humidity.
  - 4. Resistant to solvents, chemicals, and corrosion.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.
- C. Verify that concrete has achieved a minimum of 3000 psi, or 80 percent of design strength, whichever is greater.
- D. Verify that no hydrostatic pressure exists.

#### **3.2 PREPARATION**

- A. Prepare according to manufacturer's written instructions, industry guidelines, and as follows:
  - 1. Clean concrete substrates of foreign substances in accordance with ASTM F710 to include, but not limited to, adhesive residue, floor sealers, curing compounds, wall plaster and joint compound, cleaning compounds, wax, oil, dirt, or other substances that could interfere with or block the absorption of product into the concrete surface.
  - 2. Absorption Testing: Comply with ASTM F3191 to verify an absorptive/porous concrete surface. If substrate does not comply, abrade concrete surface to a concrete surface profile (CSP) complying with ICRI 310.2R CSP 1 to 3 to ensure an absorptive/porous substrate per ASTM F3191.
  - 3. Moisture Testing: Not required.
  - 4. pH Testing: Not required.
  - 5. Bond Testing: Apply system to 100 sq. ft. (9.29 sq. m.) of prepared concrete substrate and test according to ASTM D7234. Proceed with application when bond strength is greater than 200 psi (1.38 MPa) with failure of concrete substrate.
- B. Fill and seal cracks with polymer-fortified cementitious patching and leveling compound, installed according to manufacturer's instructions. Do not fill expansion joints or other moving joints.
- C. Protect adjacent surfaces during application.

#### **3.3 INSTALLATION**

- A. Install in accordance with manufacturer's instructions, approved submittals and in proper relationship with adjacent construction.
  - 1. Do not overapply or allow puddles. Remove excess material with manufacturer's recommended trowel to ensure even distribution.
- B. Cure MVE-control solution a minimum of 8 hours, and in accordance with manufacturer's instructions.
- C. After curing, repair surface defects, such as pinholes or bubbles with additional MVE-control solution.

- D. Apply bond promoter to surface of MVE-control solution: Apply according to manufacturer's instructions and recommended spreading rate:
  - 1. Roll and cross roll to provide uniform, monolithic surface.
  - 2. Cure for a minimum of 1 hour, and in accordance with manufacturer's instructions prior to applying flooring adhesives.

### **3.4 FIELD QUALITY CONTROL**

- A. Inspect applied system for non-conforming work.

### **3.5 CLEANING**

- A. Immediately clean MVE-control system from glass and metal with soap and water, and dry.

### **3.6 PROTECTION**

- A. Protect MVE-control system from staining, laitance, and contamination before flooring installation.
- B. Do not allow subsequent testing for flooring installation to compromise MVE-control system.

**END OF SECTION 090561.13**

**SECTION 092713**

**GLASS FIBER REINFORCED GYPSUM  
ARCHITECTURAL FORMS**

**PART 1 – GENERAL**

**1.1 RELATED DOCUMENTS**

This specification is a general outline the CastWorks Glass Fiber Reinforced Gypsum (GRG/GFRG) requirements, as they pertain to the overall project design. In all cases, the Manufacturer's printed specifications shall govern the work of this section.

**1.2 SUMMARY**

A. Section Includes:

1. Furnish all materials, labor, equipment, and services necessary for the supply and installation of CastWorks GRG components as indicated on the drawings and contract documents, all in compliance with local codes and/or ordinances.
2. Work shall include supply of GRG components, installation, and finishing guidance.

B. Related Sections:

1. Section 05 10 00 Structural Metal Framing
2. Section 05 40 00 Cold-Formed Metal Framing
3. Section 06 10 00 Rough Carpentry
4. Section 09 29 00 Gypsum Board
5. Section 09 90 00 Painting and Coating

C. Substitutions:

1. Manufacturers desiring to submit proposals other than CastWorks GRG architectural forms shall, at least 10 days prior to the bid date, submit to the Architect all descriptive information of the system. These Manufacturers must have a minimum of three years' experience with the system, provide photographs, and shop drawings of at least three projects similar in detail and scope with names, addresses and phone contacts of the respective Architects and Installation Contractors. Independent test data showing compliance with the specified system and three samples of similar details must also be submitted.

**1.3 REFERENCES**

A. American Society for Testing and Materials (ASTM):

1. ASTM C1355/C1355M Standard Specification for Glass Fiber Reinforced Gypsum Composites
2. ASTM C1381 Standard Specification for Molded Glass Fiber Reinforced Gypsum Parts
3. ASTM D638 Standard Test Method for Tensile Properties of Plastics
4. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials

5. ASTM C947 Standard Test Method for Flexural Properties of Thin-Section Glass-Fiber-Reinforced Concrete (Using Simple Beam with Third-Point Loading)
6. ASTM D256 Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
7. ASTM D696 Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C with a Vitreous Silica Dilatometer
8. ASTM E136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
9. ASTM C472 Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete
10. ASTM C473 Standard Test Methods for Physical Testing of Gypsum Panel Products
11. ASTM D2583 Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor
12. ASTM C840 Standard Specification for Application and Finishing of Gypsum Board

#### **1.4 SUBMITTALS**

- A. Submit a minimum of three 3" x 3" or 8" x 8" CastWorks GRG flat samples to the Finishing Contractor for paint selection.
- B. Submit shop drawings for approval showing plans, sections, details, joint treatment, reinforcing, fastening devices and the relation of the CastWorks GRG components to the surrounding construction.
- C. Product Data: Submit manufacturer's technical data.

#### **1.5 RESPONSIBILITY**

- A. The Gypsum Board Contractor shall install and tape the work under this section and he will be responsible for coordinating the installation with drywall work and other trades.

#### **1.6 DELIVERY, STORAGE, HANDLING AND PROTECTION**

- A. Transport and handle units in a manner that avoids excessive stresses or damage.
- B. Components displaying obvious damage must be rejected at site at time of delivery.
- C. Store the components in a controlled environment, weather protected, on level surfaces, with temporary supports as required. Do not stack or lean.

#### **1.7 WARRANTY**

One year from substantial completion.

### **PART 2 – PRODUCTS**

## 2.1 MANUFACTURER

- A. CastWorks by Armstrong World Industries, Inc.

## 2.2 MATERIALS

- A. CastWorks GRG components shall be prefabricated with high-density gypsum, free of resin and asbestos, reinforced with chopped strand fiber or continuous filament mat.
- B. CastWorks GRG components shall be reinforced with steel or wood as needed.
- C. Fabrication will be as per approved shop drawings and will not include assembly. If multiple components are required to complete design criteria as per contract drawings, additional site work under related section, installation or finishing may be required.
- D. CastWorks GRG components shall be ready to receive primer and paint as specified under Section 09 90 00.

## 2.3 TOLERANCES (FABRICATION)

- A. Dimensional - all directions +/- 1/8"
- B. Thickness - skin +/- 1/16"
- C. Warpage or Bowing +/- 1/16"/foot
- D. Site conditions and normal manufacturing variations may require additional site work to maintain these tolerances.

## 2.4 PHYSICAL PROPERTIES

- A. Shell Thickness 3/16"
- B. Weight (depending on reinforcing) 2 - 3 lbs/sq.ft
- C. Density 103 - 112 lbs/cu.ft
- D. Flexural Strength (ASTM C-947) Not less than 2500 psi.
- E. Modulus of Elasticity - In flexure (ASTM C-947-89 MOD.)  $3.38 \times 10^6$  psi.
- F. Tensile Strength (ASTM D-638-94 b MOD.) 1,810 psi.
- G. Impact Strength (ASTM D-256 notched) 3.26 ft.lb/ in. of notch
- H. Impact Strength (ASTM D-256 unnotched) 8.0 ft.lb/ in<sup>2</sup>.
- I. Hardness – Barcol (ASTM D-2583-93) <50
- J. Fiber Content 4 - 6% by weight
- K. Humidified Deflection (ASTM C-473-95) 1/32" to 1/8" deflection
- L. Coefficient of Expansion (ASTM D-696-91)  $0.98 \times 10^{-5}$  in./in./ °F
- M. Fuel Contribution (ASTM E-136-98a) Pass
- N. Flame Spread (ASTM E-84-94) 0, Class A
- O. Smoke Index (ASTM E-84-94) 0, Class A
- P. Fastener Withdrawal – Not less than 110 lbs

## 2.5 INSPECTION

- A. The Architect or representative shall have access to the manufacturing facilities, either prior to contract award or thereafter, to inspect or verify compliance with the above specifications.

## 3.0 EXECUTION

### **3.1 PRE-INSTALLATION RESPONSIBILITY**

- A. Field Measurements: Prior to manufacturing, the Installer will be responsible for obtaining all field dimensions for inclusion on the Manufacturer's shop drawings. Match existing profile, see drawings for profile and size.
- B. Coordination: The Installer will be responsible for the coordination of the installation with related sections, within the tolerances specified in the respective articles.
- C. Discrepancies: Prior to installation, the Installer shall check job site dimensions and conditions. Any discrepancies between design and field dimensions shall be brought to the attention of the General Contractor and the Architect.

### **3.2 INSTALLATION**

- A. Components shall be lifted/handled with suitable devices.
- B. Components shall be installed plum and true. Shim where necessary.
- C. Fasten components with self-drilling, self-tapping bugle head screws through face or back as indicated on shop drawings.
- D. Where components are suspended, use as a minimum 12-gauge galvanized steel wire and the suspension points indicated on the shop drawings.
- E. Framing, hangers, etc. as specified for Gypsum Board.
- F. Butt joints are to be adhered together using high grade polyurethane construction adhesive.

### **3.3 FINISHING**

- A. Refer to Painting Section of the Specifications.
- B. The Paint Contractor shall comply with ASTM C 840-79 Specifications.
- C. For joint finishing, tape, fill and sand all joints and introduce control joints (+/- 35'-0" O.C) as required under Section 09 25 00 of the Specifications and as outlined in U.S.G. or C.G.C. Gypsum Construction Handbook. Patch countersunk fasteners and any damage to match component texture.

### **3.4 NOTES**

- A. CastWorks GRG components shall be used for Interior Applications only.
- B. Unfinished GRG may exhibit slight imperfections, normally hidden by textured or matte finishes. To obtain satisfactory results with joints and high sheens, additional filling, sanding, level 5 priming and painting may be required.
- C. Improper sealing can cause tape joint read-through after painting. This is due to the difference in porosity between joint compounds and GRG therefore, ensure that the Painting Contractor seals all surfaces properly prior to finishing.
- D. GRG components subject to critical lighting may require a level 5 finish by others.

**SECTION 092900**

**GYPSUM BOARD**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
1. Interior gypsum board.
  2. Exterior gypsum board for ceilings and soffits.
  3. Tile backing panels.
- B. Related Requirements:
1. Section 061600 "Sheathing" for gypsum sheathing for exterior walls.
  2. Section 079219 "Acoustical Joint Sealants" for acoustical joint sealants installed in gypsum board assemblies.
  3. Section 092913 "Security Mesh" for security mesh installed behind gypsum board in walls and ceilings.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For the following:
1. Gypsum wallboard.
  2. Gypsum board, Type X.
  3. Gypsum ceiling board.
  4. Impact-resistant gypsum board.
  5. Moisture and Mold-resistant gypsum board.
  6. Glass-mat, water-resistant backing board.
  7. Cementitious backer units.
  8. Water-resistant gypsum backing board
  9. Sound-attenuation blankets.

**1.4 DELIVERY, STORAGE AND HANDLING**

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

**1.5 FIELD CONDITIONS**

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install 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.



## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.

### **2.2 GYPSUM BOARD, GENERAL**

- A. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

### **2.3 INTERIOR GYPSUM BOARD**

- A. Gypsum Wallboard: ASTM C1396/C1396M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum LLC.
    - b. USG Corporation.
  - 2. Thickness: 5/8 inch.
  - 3. Long Edges: Tapered.
- B. Gypsum Board, Type X: ASTM C1396/C1396M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum, LLC.
    - b. USG Corporation.
  - 2. Thickness: 5/8 inch or 1" liner panel.
  - 3. Long Edges: Tapered.
- C. Gypsum Ceiling Board: ASTM C1396/C1396M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum, LLC.
    - b. USG Corporation.Thickness: 5/8 inch.  
Long Edges: Tapered.
- D. Impact-Resistant Gypsum Board: ASTM C1396/C1396M gypsum board, tested according to ASTM C1629/C1629M.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum LLC.
    - b. USG Corporation.
  - 2. Core: As indicated on Drawings.
  - 3. Surface Abrasion: ASTM C1629/C1629M, meets or exceeds Level 1 requirements.
  - 4. Indentation: ASTM C1629/C1629M, meets or exceeds Level 1 requirements.
  - 5. Soft-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 1 requirements.
  - 6. Hard-Body Impact: ASTM C1629/C1629M, meets or exceeds Level 1 requirements.
  - 7. Long Edges: Tapered.
  - 8. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

- E. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum LLC.
    - b. USG Corporation.
  - 2. Core: 5/8 inch, regular type.
  - 3. Long Edges: Tapered.
  - 4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

## **2.4 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS**

### **2.5 TILE BACKING PANELS**

- A. Glass-Mat, Water-Resistant Backing Board: ASTM C1178/C1178M, with manufacturer's standard edges.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Georgia-Pacific Gypsum, LLC.
  - 2. Core: 5/8 inch, Type X.
  - 3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.
- B. Cementitious Backer Units: ANSI A118.9 and ASTM C1288 or ASTM C1325, with manufacturer's standard edges.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Georgia-Pacific Gypsum, LLC.
  - 2. Thickness: 5/8 inch
  - 3. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.
- C. Water-Resistant Gypsum Backing Board: ASTM C1396/C1396M, with manufacturer's standard edges.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Georgia-Pacific Gypsum, LLC.
  - 2. Core 5/8 inch, Type X.

### **2.6 TRIM ACCESSORIES**

- A. Interior Trim: ASTM C1047.
  - 1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
  - 2. Shapes:
    - a. Cornerbead.
    - b. U-Bead: J-shaped; exposed short flange does not receive joint compound.
    - c. Expansion (control) joint.

### **2.7 JOINT TREATMENT MATERIALS**

- A. General: Comply with ASTM C475/C475M.
- B. Joint Tape:

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1. Interior Gypsum Board: Paper.
  2. Exterior Gypsum Soffit Board: Paper.
  3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
- C. Joint Compound for Interior Gypsum Board: 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 drying-type, all-purpose compound.
    - a. Use setting-type compound for installing paper-faced metal trim accessories.
  3. Fill Coat: For second coat, use drying-type, all-purpose compound.
  4. Finish Coat: For third coat, use drying-type, all-purpose compound.
  5. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound.
- D. Joint Compound for Exterior Applications:
1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
  2. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.

## 2.8 AUXILIARY MATERIALS

- A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
1. Verify adhesives have a VOC content of 50 g/L or less.
- B. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
- C. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
- D. Thermal Insulation: As specified in Section 072100 "Thermal Insulation."

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

- A. Comply with ASTM C840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered

edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels 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.
- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

### **3.3 INSTALLATION OF INTERIOR GYPSUM BOARD**

- A. Install interior gypsum board in the following locations:
  - 1. Wallboard Type: As indicated on Drawings.
  - 2. Type X: As indicated on Drawings.
  - 3. Ceiling Type: As indicated on Drawings..
  - 4. Impact-Resistant Type: As indicated on Drawings.
  - 5. Moisture and Mold-Resistant Type: As indicated on Drawings.
  - 6. Type C: Where required for specific fire-resistance-rated assembly indicated.
- B. Single-Layer Application:
  - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
  - 2. On partitions/walls, apply gypsum panels vertically (parallel to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
    - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
    - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
  - 3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
  - 4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- C. Multilayer Application:
  - 1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.

2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
3. Fastening Methods: Fasten base layers as indicated by fire-resistance rated assembly.

### **3.4 INSTALLATION OF TILE BACKING PANELS**

- A. Glass-Mat, Water-Resistant Backing Panels: Comply with manufacturer's written installation instructions and install at locations indicated to receive tile. Install with 1/4-inch gap where panels abut other construction or penetrations.
- B. Cementitious Backer Units: ANSI A108.11, at [showers, tubs, and where indicated] [locations indicated to receive tile].
- C. Water-Resistant Backing Board: Install where indicated with 1/4-inch gap where panels abut other construction or penetrations.
- D. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

### **3.5 INSTALLATION OF TRIM ACCESSORIES**

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C840.
- C. Interior Trim: Install in the following locations:
  1. Cornerbead: Use at outside corners.
  2. U-Bead: Use at exposed panel edges.

### **3.6 FINISHING GYPSUM BOARD**

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints, and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.
- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
  1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
  2. Level 2: Panels that are substrate for tile or Panels that are substrate for acoustical tile
  3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
    - a. Primer and its application to surfaces are specified in Section 099123 "Interior Painting."

### **3.7 PROTECTION**

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

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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.

**END OF SECTION 092900**

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## SECTION 092913 SECURITY MESH

### PART 1 GENERAL

#### 1.1 SCOPE OF WORK

Supply and install steel expanded mesh panels as a penetration barrier behind wall board using the manufacturers' recommended method of installation.

#### 1.2 SYSTEM DESCRIPTION

As manufactured by AMICO Security, Security Mesh™ shall be made from a sheet of steel that is simultaneously slit and stretched into a rigid and open continuous sheet that cannot unravel. The finished shape of the mesh openings shall be a flattened diamond. Conventional expanded metal not manufactured specifically for security purposes is NOT acceptable for this use. Security Mesh™ shall be attached to framing members by using AMICO Secura Clip™ fasteners following the manufacturers recommended spacing.

#### 1.3 REFERENCES

All components and parts in this specification shall meet or exceed current standards and specifications as designated by the American Society for Testing and Materials and shall be certified Security Mesh™ per ASTM F1267, Type 2, Class 1 mill finish. Underwriters Laboratories Fire Rated Assemblies (per U/L subject File #1857) will not be jeopardized by using AMICO's Security Mesh™ in the fire rated assembly.

#### 1.4 SUBMITTAL

The manufacturers' submittal information shall include brochures, details and specifications and samples.

#### 1.5 STORAGE AND HANDLING

Materials shall be stored in a clean dry location with proper ventilation to avoid damage from moisture. Materials shall be protected against damage from weather, vandalism, and theft. In the event of freight damage, note freight bill and contact manufacturer immediately.

### PART 2 MATERIALS

#### 2.1 MANUFACTURER

Amico Security, 3245 Fayette Avenue, Birmingham, AL 35208, Email: [securitymesh@amicosecurity.com](mailto:securitymesh@amicosecurity.com), Web: [www.amicosecurity.com](http://www.amicosecurity.com), Telephone Direct: 205-783-6219, Toll Free: 855-552-6426

#### 2.2 MATERIALS

##### A. AMICO SECURITY MESH – ASM 1.5 –9F MEDIUM SECURITY.

The Security Mesh™ used shall conform to the following specification:  
Carbon steel – meet or exceed ASTM A-1011.

##### B. PHYSICAL PROPERTIES

1. Width of panel – 4ft (1,219mm) Also produced in 5ft (1,524mm) and 6ft (1,829mm) widths
2. Length of panel – 8ft (2,438mm) Also produced in 10ft (3,048mm) and 12ft (3,658mm) lengths
3. Mesh diamond width – 1.330in (33.78mm) x 3.200in (81.3mm) long bond to bond with 9 diamonds per 12in (304.8mm) of width
4. Mesh size opening – width 1.000in (25.4mm) x 2.653in (67.39mm) long allowing 76% open area
5. Mesh strand width – 0.158in (4.01mm)
6. Mesh strand thickness – 0.108in (2.74mm)
7. Weight – 1.05 lbs/sf<sup>2</sup> (5.12 kg/m<sup>2</sup>)
8. Security Mesh is produced by AMICO Security

Tolerances: SWD = -0 + 0.25in (6.4mm) per 12in (304.8mm) of dimension  
LWD = -0 + 0.25in (6.4mm) per 12in (304.8mm) of dimension



Scale shown 1:1

#### C. AMICO SECURA CLIPS

Security Mesh™ shall be attached to framing members using AMICO Secura Clip™ fasteners and the appropriate threaded fasteners. Welding is an acceptable means of attachment. Flat bugle head self-tapping screws long enough to penetrate steel framing by a minimum 3/8in (9.5mm). For wood framing applications use 1-5/8-in (41mm) fine thread drywall screw allowing the fastener to penetrate the framing member at least 1-1/2in (38.1mm). Install Secura Clip™ fasteners, at a minimum, on 12in (304.8mm) centers per framing member. Secura Clip™ fasteners are the manufacturer's preferred method of securing mesh panels to framing.

#### D. Finish

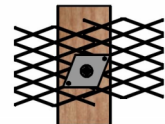
Security Mesh is supplied "mill finish" HR P&O. No sealers or galvanizing is required for typical applications. In some very unique situations stainless steel Security Mesh is supplied. For information concerning applications where stainless steel may be advantageous please call 205-783-6219 or 855-552-6426.

### PART 3 EXECUTION

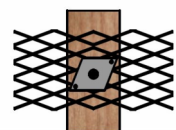
#### 3.1 INSTALLATION

Framing members should be no less than 20GA. Security Mesh panels may be installed with diamonds running in either direction. It is preferred to have mesh joints either joint staggered (Detail A) or butt together (Detail B). It is also acceptable to overlap mesh joints with owner's prior written approval. Panels shall join on framing members. If panels join in between framing members, in any direction, adjoining panels shall be tied with 18GA tie wire at the same frequency as clips or welding.

NOTE: BOTH PANEL JOINT DETAILS ARE ACCEPTABLE METHODS.



DETAIL A: STAGGERED PANEL DETAIL



DETAIL B: BUTT JOINTED PANEL DETAIL



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**SECTION 093013**

**CERAMIC TILING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Porcelain tile.
  - 2. Glazed wall tile.
  - 3. Tile backing panels.
  - 4. Waterproof membrane for thinset applications.
  - 5. Crack isolation membrane.
- B. Related Requirements:
  - 1. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
  - 2. Section 092900 "Gypsum Board" for cementitious backer units.

**1.3 DEFINITIONS**

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- C. Face Size: Actual tile size, excluding spacer lugs.
- D. Module Size: Actual tile size plus joint width indicated.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.
- C. Samples for Initial Selection: For tile, grout, and accessories involving color selection.
- D. Samples for Verification:
  - 1. Full-size units of each type and composition of tile and for each color and finish required
  - 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 12 inches square, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.

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3. Full-size units of each type of trim and accessory for each color and finish required.
4. Stone thresholds in 6-inch lengths.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.
- B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.
- C. Product Certificates: For each type of product.
- D. Product Test Reports: For tile-setting and -grouting products and certified porcelain tile.

**1.6 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
  2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

**1.7 QUALITY ASSURANCE**

- A. Installer Qualifications:
  1. Installer is a Five-Star member of the National Tile Contractors Association or a Trowel of Excellence member of the Tile Contractors' Association of America.
  2. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.
  3. Installer employs only Ceramic Tile Education Foundation Certified Installers or installers recognized by the U.S. Department of Labor as Journeyman Tile Layers for Project.

**1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.

**1.9 FIELD CONDITIONS**

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
  2. Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.
- B. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
1. Waterproof membrane.
  2. Crack isolation membrane.
  3. Cementitious backer units.

## 2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.
- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

## 2.3 TILE PRODUCTS

- A. Porcelain Tile Type FT-1: Unglazed porcelain tile.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Trinity Surfaces Ceasar Ceramics Stoneways Flight
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 12 x 24 inches.
  4. Face Size Variation: Rectified.
  5. Thickness: 0.040 inch.
  6. Face: Plain with square or cushion edges.
  7. Dynamic Coefficient of Friction: Not less than 0.42.
  8. Tile Color, Glaze, and Pattern: As indicated on Drawings.
  9. Shade Variation: Moderate (V3).
  10. Grout Color: Mapei - 105 Driftwood
- B. Porcelain Tile Type FT-2: Unglazed porcelain tile.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Trinity Surfaces - Milos Amani Bronze
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 3 x 12 inches.
  4. Face Size Variation: Rectified.
  5. Thickness: 8 mm.
  6. Face: Plain with square or cushion edges.

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7. Dynamic Coefficient of Friction: Not less than 0.42.
  8. Tile Color, Glaze, and Pattern: As indicated on Drawings.
  9. Shade Variation: Moderate (V3).
  10. Grout Color: As selected by Interior Designer from Manufacturer's full range.
- C. Porcelain Tile Type WT-1: Unglazed porcelain wall tile.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Trinity Surfaces - Ceasar Ceramics Stoneways Flight
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 12 x 24 inches.
  4. Face Size Variation: Rectified.
  5. Thickness: 0.040 inch.
  6. Face: Plain with square or cushion edges.
  7. Dynamic Coefficient of Friction: Not less than 0.42.
  8. Tile Color, Glaze, and Pattern: As indicated on Drawings.
  9. Shade Variation: Moderate (V3).
  10. Grout Color: Mapei - 105 Driftwood
- D. Porcelain Tile Type WT-2: Unglazed porcelain wall tile.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Trinity Surfaces - Milos Amani Bronze
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 3 x 12 inches.
  4. Face Size Variation: Rectified.
  5. Thickness: 8 mm.
  6. Face: Plain with square or cushion edges.
  7. Dynamic Coefficient of Friction: Not less than 0.42.
  8. Tile Color, Glaze, and Pattern: As indicated on Drawings.
  9. Shade Variation: Moderate (V3).
  10. Grout Color: As selected by Interior Designer from Manufacturer's full range.
- E. Porcelain Tile Type WT-3: Unglazed porcelain wall tile, cove base.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Trinity Surfaces - Ceasar Ceramics - Stoneways Flight
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 6 x 12 inches.
  4. Face Size Variation: Rectified.
  5. Thickness: 0.040 inch.
  6. Face: Plain with square or cushion edges.
  7. Dynamic Coefficient of Friction: Not less than 0.42.
  8. Tile Color, Glaze, and Pattern: As indicated on Drawings.
  9. Shade Variation: Moderate (V3).
  10. Grout Color: Mapei - 105 Driftwood
- F. Porcelain Tile Type WT-4: Glazed ceramic wall tile.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. DaTile - Mythology Aura MY95, Blue
  2. Certification: Tile certified by the Porcelain Tile Certification Agency.
  3. Face Size: 4 x 12 inches.
  4. Face Size Variation: Undulated.
  5. Thickness: 5/16
  6. Face: Plain with square or cushion edges.

7. Dynamic Coefficient of Friction: Not less than 0.42.
8. Tile Color, Glaze, and Pattern: As indicated on Drawings.
9. Shade Variation: Moderate (V3).
10. Grout Color: As selected by Interior Designer from Manufacturer's full range.

## 2.4 THRESHOLDS

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
  1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1/16 inch above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 1/2 inch or less above adjacent floor surface.
- B. Marble Thresholds: ASTM C503/C503M, with a minimum abrasion resistance of 10] according to ASTM C1353 or ASTM C241/C241M and with honed finish.
  1. Description: Uniform, fine- to medium-grained white stone with gray veining.

## 2.5 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 or ASTM C1325, Type A, in maximum lengths available to minimize end-to-end butt joints.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Georgia-Pacific Gypsum LLC.
    - b. USG Corporation.
  2. Thickness: 1/2 inch

## 2.6 WATERPROOF MEMBRANE

- A. General: Manufacturer's standard product, selected from the following, that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Noble Company (The).
  2. Nominal Thickness: 0.030 inch.
  3. Nominal Thickness: 0.040 inch.
- C. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Schluter Systems L.P.
- D. Latex-Portland Cement Waterproof Mortar: Flexible, waterproof mortar consisting of cement-based mix and latex additive.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Laticrete International, Inc.
    - b. MAPEI Corporation.

- E. Waterproofing and Tile-Setting Adhesive: One-part, fluid-applied product intended for use as both waterproofing and tile-setting adhesive in a two-step process.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Bostik, Inc.

## 2.. CRACK ISOLATION MEMBRANE

- A. General; Manufacturer's standard product, selected from the following, that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Crack Isolation Membrane and Tile-Setting Adhesive: One-part, fluid-applied product intended for use as both a crack isolation membrane and tile-setting adhesive in a two-step process.
  - 1. 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:
    - a. Laticrete International, Inc.
    - b. MAPEI Corporation.
    - c. Schulter Systems.

## 2.8 SETTING MATERIALS

- A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.
  - 1. Cleavage Membrane: Asphalt felt, ASTM D226/D226M, Type I (No. 15); or polyethylene sheeting, ASTM D4397, 4.0 mils thick.
  - 2. Reinforcing Wire Fabric: Galvanized, welded-wire fabric, 2 by 2 inches by 0.062-inch diameter; comply with ASTM A185/A185M and ASTM A82/A82M, except for minimum wire size.
  - 3. Expanded Metal Lath: Diamond-mesh lath complying with ASTM C847.
    - a. Base Metal and Finish for Interior Applications: Uncoated or zinc-coated (galvanized) steel sheet, with uncoated steel sheet painted after fabrication into lath.
    - b. Base Metal and Finish for Exterior Applications: Zinc-coated (galvanized) steel sheet.
    - c. Configuration over Studs and Furring: Flat.
    - d. Configuration over Solid Surfaces: Self-furring.
    - e. Weight: 2.5 lb/sq. yd.
- B. Standard Dry-Set Mortar (Thinset): ANSI A118.1.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Laticrete International, Inc.
    - b. MAPEI Corporation.
  - 2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.1.
- C. Modified Dry-Set Mortar (Thinset): ANSI A118.4.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Laticrete International, Inc.
    - b. MAPEI Corporation.

2. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

## **2.9 GROUT MATERIALS**

- A. Sand-Portland Cement Grout: ANSI A108.10, consisting of white or gray cement and white or colored aggregate as required to produce color indicated.
- B. Standard Cement Grout: ANSI A118.6.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Laticrete International, Inc.
    - b. MAPEI Corporation.
- C. High-Performance Tile Grout: ANSI A118.7.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Laticrete International, Inc.
    - b. MAPEI Corporation.
- D. Water-Cleanable Epoxy Grout: ANSI A118.3, with a VOC content of 65 g/L or less.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Laticrete International, Inc.
    - b. MAPEI Corporation.

## **2.10 MISCELLANEOUS MATERIALS**

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.
- B. Vapor-Retarder Membrane: Polyethylene sheeting, ASTM D4397, 4.0 mils thick.
- C. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless steel, ASTM A276/A276M or ASTM A666, 300 Series exposed-edge material.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Schluter Systems L.P.
- D. 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.
- E. Floor Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Laticrete International, Inc.

## **2.11 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**

#### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
  - 2. Verify that concrete substrates for tile floors installed with [thinset mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
    - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
    - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
  - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
  - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with [thinset mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.
- B. Where indicated, prepare substrates to receive waterproof membrane by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

#### **3.3 INSTALLATION OF CERAMIC / PORCELAIN TILE**

- A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
  - 1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:
    - a. Tile floors in wet areas.
    - b. Tile floors consisting of tiles 8 by 8 inches or larger.
- B. 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.

- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.
- F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
  - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
  - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
  - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
  - 1. Glazed Wall Tile: 1/8 inch.
  - 2. Porcelain Tile: 1/8 inch
- H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
  - 1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
- I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.
  - 1. At locations where mortar bed (thickset) would otherwise be exposed above adjacent floor finishes, set thresholds in modified dry-set mortar (thinset).
  - 2. Do not extend waterproof membrane or crack isolation membrane under thresholds set in standard dry-set or modified dry-set mortar. Fill joints between such thresholds and adjoining tile set on waterproof membrane or crack isolation membrane with elastomeric sealant.
- J. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.
- K. Floor Sealer: Apply floor sealer to cementitious grout joints in tile floors according to floor-sealer manufacturer's written instructions. As soon as floor sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

### **3.4 INSTALLATION OF TILE BACKING PANEL**

- A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use modified dry-set mortar for bonding material unless otherwise directed in manufacturer's written instructions.

### **3.5 INSTALLATION OF WATERPROOF MEMBRANE**

- A. Install waterproof membrane to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.
- B. Allow waterproof membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.

### **3.6 INSTALLATION OF CRACK ISOLATION MEMBRANE**

- A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.
- B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

### **3.7 ADJUSTING AND CLEANING**

- A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.
- B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
  - 1. Remove grout residue from tile as soon as possible.
  - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

### **3.8 PROTECTION**

- A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- B. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

### **3.9 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE**

- A. Interior Floor Installations, Concrete Subfloor:
  - 1. Ceramic Tile Installation TCNA F115; thinset mortar; epoxy grout.
    - a. Ceramic Tile Type: Porcelain
    - b. Thinset Mortar: Standard dry-set or Modified dry-set.
    - c. Grout: Water-cleanable epoxy grout.
  - 2. Ceramic Tile Installation: TCNA F125 Full except where partial coverage is indicated [TCNA F125-Partial]; thinset mortar on crack isolation membrane.
    - a. Ceramic Tile Type: Porcelain
    - b. Thinset Mortar: Modified dry-set or Medium-bed, modified dry-set.
  - 3. Grout: Standard sanded cement, Standard unsanded cement, High-performance sanded or Water-cleanable epoxy grout, Ceramic Tile Installation TCNA F131; water-cleanable, tile-setting epoxy; epoxy grout.

- a. Ceramic Tile Type: Porcelain.
  - b. Grout: Water-cleanable epoxy grout.
- B. Interior Wall Installations, Wood or Metal Studs or Furring:
- 1. Ceramic Tile Installation: TCNA W221 and ANSI A108.1C; cement mortar bed (thickset) over waterproof membrane on solid backing.
    - a. Ceramic Tile Type: Glazed Porcelain or Ceramic.
    - b. Bond Coat for Wet-Set Method: Standard dry-set, Modified dry-set mortar.
    - c. Bond Coat for Cured-Bed Method: Standard dry-set, Modified dry-set] mortar.
    - d. Grout: Sand-portland cement, Standard sanded cement, High-performance sanded, or Water-cleanable epoxy grout.
  - 2. Ceramic Tile Installation: TCNA W222 and ANSI A108.1C; one-coat cement mortar bed (thickset) over waterproof membrane on solid backing.
    - a. Ceramic Tile Type: Glazed Porcelain or Ceramic..
    - b. Bond Coat for Wet-Set Method: Standard dry-set, or Modified dry-set mortar.
    - c. Bond Coat for Cured-Bed Method: Standard dry-set, or Modified dry-set mortar.
    - d. Grout: Sand-portland cement, Standard sanded cement, High-performance sanded, or Water-cleanable epoxy grout.
  - 3. Ceramic Tile Installation : TCNA W244C or TCNA W244F; thinset mortar on cementitious backer units or fiber-cement backer board.
    - a. Ceramic Tile Type: Glazed Porcelain or Ceramic.
    - b. Thinset Mortar: Standard dry-set or Modified dry-set mortar.
    - c. Grout: Sand-portland cement, Standard sanded cement, High-performance sanded, or Water-cleanable epoxy grout.
  - 4. Ceramic Tile Installation : TCNA W245 or TCNA W248; thinset mortar on glass-mat, water-resistant gypsum backer board.
    - a. Ceramic Tile Type: Glazed Porcelain or Ceramic..
    - b. Thinset Mortar: Standard dry-set,or Modified dry-set mortar.
    - c. Grout: Sand-portland cement, Standard sanded cement, High-performance sanded, or Water-cleanable epoxy] grout.

**END OF SECTION 093013**

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**SECTION 095113**

**ACOUSTICAL PANEL CEILINGS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes acoustical panels and exposed suspension systems for interior ceilings.
- B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1. Ceiling suspension-system members.
  - 2. Method of attaching hangers to building structure.
    - a. Furnish layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
  - 3. Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
  - 4. Size and location of initial access modules for acoustical panels.
  - 5. Items penetrating finished ceiling and ceiling-mounted items including the following:
    - a. Lighting fixtures.
    - b. Diffusers.
    - c. Grilles.
    - d. Speakers.
    - e. Sprinklers.
    - f. Access panels.
    - g. Perimeter moldings.
  - 6. Show operation of hinged and sliding components covered by or adjacent to acoustical panels.
  - 7. Minimum Drawing Scale: 1/8 inch = 1 foot.
- B. Qualification Data: For testing agency.

**1.4 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For finishes to include in maintenance manuals.

**1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

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1. Acoustical Ceiling Units: Full-size panels equal to two (2) percent of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to two (2) percent of quantity installed.

**1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

**1.7 FIELD CONDITIONS**

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
  1. Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.

**2.2 PERFORMANCE REQUIREMENTS**

- A. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. 1. Indicate design designations from UL or from the listings of another qualified testing agency.
- C. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  1. Flame-Spread Index: Class A according to ASTM E1264.
  2. Smoke-Developed Index: 50 or less.

**2.3 ACOUSTICAL PANELS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Armstrong Ceiling & Wall Solutions – To be determined (T.B,D.) Match existing ceiling tile.
  2. USG Corporation.
  3. Requests for substitutions will be considered in accordance with provisions of Section 016000 – Product Requirements.

- B. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- C. Classification: Provide panels as follows:
  - 1. Type and Form: Type IV, mineral base with membrane-faced overlay; Form 2, water felted; with vinyl overlay on face.
  - 2. Pattern: To match existing panels.
- D. Color: White.
- E. Light Reflectance (LR): Not less than 0.88.
- F. Ceiling Attenuation Class (CAC): Not less than 35.
- G. Noise Reduction Coefficient (NRC): Not less than .0.80.
- H. Articulation Class (AC): Not less than 170.
- I. Edge/Joint Detail: Square. or Reveal sized to fit flange of exposed suspension-system members (will be located in Lobby Room 101)
- J. Thickness: 3/4 inch.
- K. Modular Size: 24 by 24 inches.
- L. Panel Options: Firecode; a fire rated option, designed to meet life safety codes.
- M. Antimicrobial Treatment: Manufacturer's standard broad spectrum, antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

## 2.4 METAL SUSPENSION SYSTEM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Armstrong Ceiling & Wall Solutions.
  - 2. USG Corporation.
- B. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.
- C. Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized, G30 coating designation; with prefinished 9/16-inch-wide metal caps on flanges.
  - 1. Structural Classification: Intermediate duty system.
  - 2. Tee Profile: Narrow Face 15/16 inches wide.
  - 3. Tee height: 1 inch.
  - 4. Face Design: [Flanges formed with an integral center reveal.
  - 5. Cap Finish: Painted white.
- D. Narrow-Face, Capped, Double-Web, Fire-Rated Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; as defined by ASTM C635, commercial quality



pretreated and painted hot-dipped galvanized cold rolled steel, exposed surfaces prefinished in manufacturer's standard corrosion resistant enamel paint finish

1. Structural Classification: Intermediate-duty system
2. Tee Profile: Narrow Face 15/16 inches wide.
3. Tee height: 1 inch.
4. Fire Rating: Firecode.
5. Face Design: Flat, flush.
6. Cap Finish: Painted white.

## 2.5 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
  - a. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.
- B. Wire Hangers, Braces, and Ties: Provide wires as follows:
  1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
  2. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 12 gauge wire

## 2.6 METAL EDGE MOLDINGS AND TRIM

- A. Manufacturers: Subject to compliance with requirements provide products by one of the following:
  1. Armstrong World Industries, Inc.
  2. USG Corporation.
- B. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
  1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and match width and configuration of exposed runners unless otherwise indicated.
  2. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.
- C. Extruded-Aluminum Edge Moldings and Trim: Where indicated, provide manufacturer's extruded-aluminum edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips.
  1. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C635/C635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

## 2.7 ACOUSTICAL SEALANT

- A. Acoustical Sealant: As specified in Section 079219 "Acoustical Joint Sealants."

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Layout openings for penetrations centered on the penetrating items.

### **3.3 INSTALLATION**

- A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.
  - 1. Fire-Rated Assembly: Install fire-rated ceiling systems according to tested fire-rated design.
- B. Suspend ceiling hangers from building's structural members and as follows:
  - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
  - 2. Splay hangers only where required and, if permitted with fire-resistance-rated ceilings, to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.
  - 4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
  - 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
  - 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, post installed mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
  - 7. Do not attach hangers to steel roof deck. Attach hangers to structural members.

8. Space hangers not more than 48 inches o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
  9. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or post installed anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
  2. Screw attach moldings to substrate at intervals not more than 16 inches o.c. and not more than 3 inches from ends. Miter corners accurately and connect securely.
  3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
1. Arrange directionally acoustical panels as follows:
    - a. As indicated on reflected ceiling plans.
  2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
  3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges
  4. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
  5. Protect lighting fixtures and air ducts according to requirements indicated for fire-resistance-rated assembly.

### **3.4 CLEANING**

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.
- B. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

**END OF SECTION 095113**

**SECTION 096513**

**RESILIENT BASE AND ACCESSORIES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Thermoplastic-rubber base.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.
- C. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

**1.4 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

**1.6 FIELD CONDITIONS**

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F in spaces to receive resilient products during the following periods:
  - 1. 48 hours before and after installation.
  - 2. During installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F
- C. Install resilient products after other finishing operations, including painting, have been completed.

## **PART 2 - PRODUCTS**

### **2.1 THERMOPLASTIC-RUBBER BASE**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following: Refer to Drawings for locations/Manufacturer colors used.
1. Johnsonite; a Tarkett company – RWDC-TG5 Macadamia,  
RWDC – 58 Windsor Blue
- B. Product Standard: ASTM F1861, Type TS (rubber, thermoplastic), Group I (solid, homogeneous).
1. Style and Location:
    - a. Recessed toeless base profile.
- C. Thickness: 0.125 inch.
- D. Height: 4.25 inches.
- E. Lengths: Cut lengths 48 inches long or coils in manufacturer's standard length.
- F. Outside and Inside Corners: Job formed or preformed.
- G. Colors: As indicated above.

### **2.2 INSTALLATION MATERIALS**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. 1. Manufacturer: Schönox, 511 Wilhite Street, Florence, AL 35630: Tel: 855-391-2649.
- C. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
- D. 1. Manufacturer: Schönox, 511 Wilhite Street, Florence, AL 35630: Tel: 855-391-2649.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
1. Installation of resilient products indicates acceptance of surfaces and conditions.

### **3.2 PREPARATION**

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates for Resilient Stair Accessories: Prepare horizontal surfaces according to ASTM F710.
  - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
  - 3. Adhesive:
    - a. Basis of Design: Schönox Protect as manufactured by Schönox.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. 1. Leveling Compound:
  - E. a. Basis of Design: Schönox XM as manufactured by Schönox.
- F. 2. Patching Compound:
  - G. a. Basis of Design: Schönox SL as manufactured by Schönox.
- H. Do not install resilient products until materials are the same temperature as space where they are to be installed.
  - 1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- I. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

### **3.3 RESILIENT BASE INSTALLATION**

- A. Comply with manufacturer's written instructions for installing resilient base.
- B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.
- E. Do not stretch resilient base during installation.
- F. Preformed Corners: Install preformed corners before installing straight pieces.
- G. Job-Formed Corners:
  - 1. Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

- a. Form without producing discoloration (whitening) at bends.
2. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.
  - a. Miter or cope corners to minimize open joints.

### **3.4 RESILIENT ACCESSORY INSTALLATION**

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

### **3.5 CLEANING AND PROTECTION**

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- B. Perform the following operations immediately after completing resilient-product installation:
  1. Remove adhesive and other blemishes from surfaces.
  2. Sweep and vacuum horizontal surfaces thoroughly.
  3. Damp-mop horizontal surfaces to remove marks and soil.
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

**END OF SECTION 096513**

**SECTION 096519**

**RESILIENT TILE FLOORING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:

- 1. Luxury vinyl floor tile.

**1.3 ACTION SUBMITTALS**

- A. Shop Drawings: For each type of resilient floor tile.
  - 1. Include floor tile layouts, edges, columns.
- B. Samples: Full-size units of each color, texture, and pattern of floor tile required.
- C. Samples for Verification: Full-size units of each color and pattern of floor tile required.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.

**1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

**1.6 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- B. Floor Tile: Furnish one box for every fifty (50) boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

**1.7 QUALITY ASSURANCE**

- A. Installer Qualifications: An entity that employs installers and supervisors who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
- B. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.



**1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 65 deg. F or more than 75 deg. F. Store floor tiles on flat surfaces.

**1.9 FIELD CONDITIONS**

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 68 deg. F. or more than 75 deg. F in spaces to receive floor tile during the following periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 65 deg. F, or more than 85 deg. F.
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Do not install on cement slabs unless they are thoroughly cleaned, level, structurally sound and free from paint, varnish, adhesive, oil, grease, solvent, sealer, curing compounds or other foreign substances that may adversely affect adhesion.
- F. Install floor tile after other finishing operations, including painting, have been completed.

**PART 2 - PRODUCTS**

**2.1 LUXURY VINYL FLOOR TILE**

- A. Manufacturers: Subject to compliance with requirements, provide products by the following: Refer to drawings for location/manufacturer color used.
  - 1. Shaw Contract Flooring (LVT-1): Terrain II – 4110V, Sequoia 07003  
1.404.853.7429
- B. Tile Standard: ASTM F1700.
  - 1. Class: Class III, Heavy Commercial Luxury Vinyl
  - 2. Type : .B, Embossed Surface
- C. Thickness: 5 mm.
- D. Size: 6 x 48 inches.
- E. Wear Layer: 20 mil.
- F. Installation Method: Direct Glue.
- G. Colors and Patterns: As indicated on Drawings.
- H. Manufacturers: Subject to compliance with requirements, provide products by the following: Refer to drawings for location/manufacturer color used.

1. Karndean (LVT-2): Indiana LLT202

[www.karndean.com](http://www.karndean.com)

- I. Tile Standard: ASTM F1700.
  - 1. Class: As indicated by product designations.
  - 2. Type : Textured, stone effect.
- J. Thickness: 4.5mm.
- K. Size: 19.7 x 24 inches.
- L. Wear Layer: 20 mil
- M. Installation Method: Loose lay with perimeter glue or full spread.
- N. Colors and Patterns: As indicated on Drawings.

## 2.2 INSTALLATION MATERIALS

- A. Use only cementitious patching and leveling compounds.
- B. Adhesives:
  - 1. Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine the surface before installation to ensure that the surface is clean, dry, smooth, structurally sound and free from foreign substances that may adversely affect adhesion or cause discoloration. Furthermore, ensure that the surface is free of paint, varnish, adhesive, oil grease, solvent and other foreign substances, including treatment compounds, sealers and curing compounds that may adversely affect adhesion or alter the appearance or durability of the vinyl flooring.
- B. Verify that there is no powder, scaling or mold on the surface. If there is, remove it with a mechanical sander and level with good quality cement based Portland primer.
- C. Never remove residual or other adhesive with chemical adhesive removal products: their use will automatically void the manufacturer's guarantee.
- D. Report and rectify all unsatisfactory conditions. Do not start flooring installation until all rectifications have been completed.

### 3.2 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.

- B. Concrete Substrates: Prepare according to ASTM F710.
- C. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.

Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft. and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.

- a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 8 lb of water/1000 sq. ft. in 24 hours.
  - b. Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 90 percent relative humidity level measurement.
  - c. If the test results exceed the limitations, the installation should not proceed until the problem has been corrected. In addition to and not in lieu of the moisture test, perform the Adhesive Bond Test.
  - d. Adhesive Bond Test: In several locations throughout the area to receive the flooring, glue down 3'-0" 3'-0" pieces of the flooring with the adhesive. Allow to set for 72 hours. A sufficient amount of force should be required to remove the flooring.
- D. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
  - E. Do not install floor tiles until materials are the same temperature as space where they are to be installed.
    - 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
  - F. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

### **3.3 FLOOR TILE INSTALLATION**

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
  - 1. Lay tiles square with room axis.
- C. 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.
  - 1. Lay tiles with grain running in one direction.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.

- E. Use a 3/64 inch x 3/64 inch x 3/64 inch U notched trowel. Replace worn trowels, do not re-notch worn trowel.
- F. Roll material with a 100-150 pound roller.
- G. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- H. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- I. Adhere floor tiles to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- J. Avoid foot traffic and rolling loads for 24 hours after installation is complete.

### **3.4 CLEANING AND PROTECTION**

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
  - 1. Remove adhesive and other blemishes from surfaces.
  - 2. Sweep and vacuum surfaces thoroughly.
  - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover floor tile until Substantial Completion.

**END OF SECTION 096519**

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**SECTION 096623**  
**TERRAZZO FLOORING**

**PART 1 – GENERAL**

- A. MARBLE Terrazzo tile and accessories
- B. Glass Terrazzo tile and accessories
- C. Related work specified elsewhere
  - 1. Section 03300: Cast in place concrete
  - 2. Section 06100: Rough Carpentry

**II. Quality Criteria**

- A. Provide Standard: The material is to comply with the following standards and provide the minimum results shown:

1. Abrasive Resistance	ASTM D-04060	35 mg
2. Impact Resistance	MIL-D3134F	Withstands 16 ft/lbs without cracking, delamination or chipping
3. Slip Resistance	ASTMD-2047	Wet:0.62 Dry: 0.85
4. Compressive Strength	ASTM C-579, 7 days	10,000 psi minimum
5. Tensile Strength	ASTM C-307	2,500 psi
6. Flame Spread	ASTM D-84	20
7. Smoke Generation	ASTM E-622	
8. Flaming		124
9. Non-Flaming		60
10. Fire Rating		Class A
11. Water Absorption	ASTM D-570	0.01%
12. Freeze Thaw	ASTM 6-1026	No effect
13. StainResistance	ASTMD-2299	Completely removed after 24 hours
14. Toxicity Material Safety Data		Negative
15. Critical Radiant Flux	ASTM D-648	1.0 (Class I)
16. Fungus & Bacteria Growth	MIL-F-52505	Will not support growth of fungus or bacteria when subject to mildew and bacteria tests
17. Indentation	MIL-D3134f	Withstands 2,000 lbs/sq. in. for 30 minutes without indentation
18. Flexural Strength	ASTM C-580	3,000 psi
19. Thermal Coefficient of Expansion	ASTM C-580	$21 \times 10^{-6}$

- B. Application Setting Materials and all accessory items are to be material recommended by the manufacturer of Nurazzo.

### **III. Submittals**

- A. Product Data: Submit (4) copies of manufacturer's product literature including technical information and installation instruction for each type of Floor and Wall tile, accessory, and adhesive material.
  - B. Shop Drawings: Submit 4 blue prints of Nurazzo work. Shop Drawings are to be drawn to 1/2" = 1'-0" scale or larger and are to show plans for layout work and details of joints and edge conditions.
  - C. Samples: Submit 3 samples of each pattern and color of Nurazzo required, not less than 3' x 3'.  
Samples are to be review for color, pattern and texture only.
- D. Maintenance Instructions: Submit 3 copies of written instructions for recommended periodic maintenance of Nurazzo tiles.

### **IV. Product Delivery, Storage and Handling**

- A. Material is to be delivered to the job site in manufacturer's original unopened containers.
- B. Store materials inside, undercover and protected from moisture and edge damage.
- C. Handle all materials carefully to prevent damage to edges and corners.

### **V. Job Conditions**

- A. Interior – Do not begin Nurazzo installation until the building has been held to a minimum temperature of 70°F for 5 full days. Nurazzo tile must be removed from original packaging and stacked in area it is to be installed. Tiles must be allowed to acclimate for 72 hours prior to installation. A minimum of 70°F must be maintained throughout the installation period and for 2 days after the installation is complete.

### **VI. Warranty**

- A. Nurazzo is backed by a 20 year limited warranty against wear-through. The limited warranty applies to Nurazzo that has been installed using Nurazzo manufacturer's approved support products and in strict conformity with Nurazzo Installation and Maintenance instructions. In the event of any such failure of wear-through within the warranty period, Nurazzo LLC's sole obligation is, at its expense, to furnish like or similar Nurazzo tile for the replacement of the individual tiles. The user, at his expense, will perform the replacement. Nurazzo LLC shall not be liable under any circumstances for incidental consequential damages of any kind whatsoever such as labor, inconvenience or injury. Nurazzo provides no warrant of merchantability or fitness for a particular purpose: user shall determine suitability of this product for its intended use and assumes all risks of its use and handling.

## **PART 2 – PRODUCTS**

### **I. Nurazzo Floor Tile**

- A. Raw Material: Nurazzo Tile to be manufactured of natural stone, recycled glass, and an epoxy resin binding matrix.
- B. Size: Nurazzo Tile to be ¼" thickness and either 12" x 12", 12" x 24", or 24" x 24" tile.
- C. Color: Custom Color "DC943".
  - d. Nurazzo, P.O. Box 1208, Dalton, GA 30722, Phone: (706) 275-8000, website: nurazzo.com

### **II. Thinset Method**

- A. Laticrete 254 Platinum as manufactured by Laticrete International (1 Laticrete Park North Bethany, CT 06524-3423, Phone: 203-393-0010 ext. 235 or 800-243-4788 ext.235).
- B. MAPEI: Thin-Bed Mortar: MAPEI, Ultraflex™3, MAPEI, Kerabond Keralastic™System. Rapid Setting; Granirapid System™ manufactured by MAPEI Corporation, 1144 East Newport Center Drive, Deerfield Beach, FL, 33442 (phone: 1-888-876-2734; fax 954-246-8805; email, www.mapei.com).
- C. TEC® Super Flex™ or TEC Isolight™ Mortar as manufactured by H.B. Fuller Construction Products Inc. (1105 S. Frontenac Road, Aurora, IL 60504, Phone: 1-800-552-6225)

### **III. Glue Down Method**

- A. Nurazzo 2100 Adhesive as manufactured by Nurazzo 212 Boring Drive, Dalton, Georgia 30721; Phone: 1-888-687-2996; www.nurazzo.com)

### **IV. Joint Lines**

- A. Nurazzo tiles are to be installed with a grout joint, grout should be an epoxy grout and joint lines can be as small as 1/8" but no greater than 1/4".

### **V. Expansion Joint Control Strips**

- A. Materials to be type suitable for the joint size and recommended by specifier or approved by the Nurazzo Tile manufacturer.



## **PART 3 – EXECUTION**

### **I. General Preparation**

- A. Building temperature of 70°F to have been maintained for 5 days prior to the start of installation and all material is to have been acclimatized in the building for 72 hours.

### **II. Substrate Preparation**

- A. Concrete
  - 1. The concrete or concrete block substrate will have been placed and finished for a minimum of 28 days prior to beginning installation and must have a smooth, hard finish.
  - 2. Where concrete does not have a smooth finish Lati-level 88 as manufactured by Laticrete International (1 Laticrete Park North Bethany, CT 06524-3423, Phone: 203-393-0010 ext 235 or 800-243-4788 ext 235) must be installable to bring the concrete to a smooth even finish.
  - 3. All oils, waxes, curing compounds or other materials on the surface of the concrete that will inhibit adhesion are to be removed. Surface to be completely dry prior to installation of Nurazzo.
- B. Plywood
  - 1. Plywood sub floor to be composed of two layer of 5/8" exterior grade plywood. Plywood to be screwed to framing on 16" centers.
  - 2. Surface to be completely clean and dry prior to installation of Nurazzo.
  - 3. Entire surface is to be examined for soft spots. No flexing or deflection in the surface. Replace soft substrate or add additional bracing to eliminate defections.

### **III. Installation: General**

- A. All installation to be in strict accordance with manufacturer's printed installation instructions.
- B. All cutting of Nurazzo tile to be accomplished with an abrasive or diamond blade in a rotary wet saw.
- C. All hole or circles to be cut using carbide tipped drill or diamond hole saw.
- D. Control Joints to be installed when crossing expansion joints in substrate.

### **IV. Installation: Mortar**

- A. All installation to be in strict accordance with the manufacturer's printed installation instructions. B. Do not allow grout or mortar to get on the front side of the Nurazzo tile.

### **V. Installation**

- A. All installation to be in strict accordance with manufacturer's printed instructions.

### **VI. Clean Up and Protection**

- A. Remove all excess and scrap materials from the job immediately after installation is complete.
- B. Provide Kraft paper covering over traffic areas until completion of project and floor is sealed.
- C. Remove any excess adhesive or grout from the Nurazzo immediately after it appears on the surface.

### **VII. Finishing**

- A. Finish - All application tools must be clean and should not have been used for any other product. Prepare the floor first by stripping and neutralizing the surface making sure the floor is clean and dry before application. For best results, use a white, nylon finish mop to apply the product. Apply a thin coat of NuSeal, allowing 30-45 minutes to dry before applying additional coats. Do not recoat until previous coat is completely dry. 3 to 6 coats of NuSeal are required. Once finished has dried, buff floor with a high speed (1500 rpm) buffer. Buffing will produce a beautiful shine.

**END OF SECTION 096623**

**SECTION 096813**

**TILE CARPETING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Modular carpet tile.
- B. Related Requirements:
  - 1. Section 096513 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile
  - 2. Section 096519 "Resilient Tile Flooring" for resilient wall base and accessories installed with resilient tile.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
  - 2. Include manufacturer's written installation recommendations for each type of substrate.
- B. Shop Drawings: For carpet tile installation, plans showing 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.
- C. Samples for Verification: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
  - 1. Carpet Tile: Full-size Sample.
  - 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch-long Samples.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For Installer.

- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

#### **1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
  - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
  - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

#### **1.6 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

#### **1.7 QUALITY ASSURANCE**

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.

#### **1.8 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with the Carpet and Rug Institute's CRI 104.

#### **1.9 FIELD CONDITIONS**

- A. Comply with the Carpet and Rug Institute's CRI 104 for temperature, humidity, and ventilation limitations.
- 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 levels planned for building occupants 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.
- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

#### **1.10 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, the following:
    - a. More than 10 percent edge raveling, snags, and runs.
    - b. Dimensional instability.

- c. Excess static discharge.
- d. Loss of tuft-bind strength.
- e. Loss of face fiber.
- f. Delamination.

3. Warranty Period: Limited lifetime warranty 15 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 CARPET TILE**

- A. Manufacturers: Subject to compliance with requirements, provide products by each of the following: Refer to Drawings for locations/ manufacturers color used.
  - 1. Milliken (CPT-1): Nordic Stories Americas Tectonic TTC.,
- B. Color: .251-124 - Birch Sauna
- C. Pattern: As indicated on Drawings
- D. Fiber Content: 100 percent nylon 6, 6.
- E. Fiber Type: Universal Fiber Solution Dyed.
- F. Pile Characteristic: Tufted Textured Loop pile.
- G. Density: 6,054 oz. per cu. yd.
- H. Pile Thickness: 0.105 inch for finished carpet tile according to ASTM D6859.
- I. Total Weight: 19.9 oz./ sq. yd.. for finished carpet tile.
- J. Primary Backing/Back coating: Manufacturer's standard composite materials consult manufacturer.
- K. Size: 24 by 24 inches.
- L. Applied Treatments:
  - 1. Soil Resistance Treatment: Manufacturer's standard treatment.
  - 2. Antimicrobial Treatment: Manufacturer's standard treatment.
    - a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.
- M. Performance Characteristics:
  - 1. Appearance Retention Rating: Moderate traffic, 2.5 minimum according to ASTM D7330.
  - 2. Critical Radiant Flux Classification: Not less than Class1 - 0.45 W/sq. cm, Class 2 - 0.22 W/sq. cm according to NFPA 253.
  - 3. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
  - 4. Tuft Bind: Not less than 3 lbf according to ASTM D1335.
  - 5. Delamination: Not less than 3.5 lbf/in. according to ASTM D3936.
  - 6. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
  - 7. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
  - 8. Noise Reduction Coefficient (NRC): 0.35 according to ASTM C423.
  - 9. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.

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10. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
  11. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.
- N. Manufacturers: Subject to compliance with requirements, provide products by each of the following: Refer to Drawings for locations/ manufacturers color used.
1. Shaw Contract Group; a Berkshire Hathaway company: Compilation, 5T515,
- O. Color: Essay 75429
- P. Pattern: As indicated on Drawings
- Q. Fiber Content: Ecocolution Q100 Nylon.
- R. Fiber Type: Ecocolution Q100 Nylon.
- S. Pile Characteristic: Multi Level pattern loop.
- T. Density: 5,255 oz. per cu. yd.
- U. Pile Thickness: 0.137 inch for finished carpet tile according to ASTM D6859.
- V. Stitches: 9.0 per inch.
- W. Gauge: 1/10 per inch.
- X. Total Thickness: 0.275 inches.
- Y. Total Weight: 20 oz./ sq. yd. for finished carpet tile.
- Z. Primary Backing/ Back coating: Synthetic.
- AA. Secondary Backing: Ecoworx Tile.
- BB. Size: 18 by 36 inches.
- CC. Applied Treatments:
1. Soil Resistance Treatment: Manufacturer's standard treatment.
  2. Antimicrobial Treatment: Manufacturer's standard treatment.
    - a. Antimicrobial Activity: Not less than 2-mm halo of inhibition for gram-positive bacteria, not less than 1-mm halo of inhibition for gram-negative bacteria, and no fungal growth, according to AATCC 174.
- DD. Performance Characteristics:
1. Appearance Retention Rating: Moderate traffic, 2.5 minimum according to ASTM D7330.
  2. Critical Radiant Flux Classification: Not less than Class1 - 0.45 W/sq. cm, Class 2 - 0.22 W/sq. cm according to NFPA 253.
  3. Dry Breaking Strength: Not less than 100 lbf according to ASTM D2646.
  4. Tuft Bind: Not less than 3 lbf according to ASTM D1335.
  5. Delamination: Not less than 3.5 lbf/in. according to ASTM D3936.
  6. Dimensional Tolerance: Within 1/32 inch of specified size dimensions, as determined by physical measurement.
  7. Dimensional Stability: 0.2 percent or less according to ISO 2551 (Aachen Test).
  8. Noise Reduction Coefficient (NRC): 0.35 according to ASTM C423.
  9. Colorfastness to Crocking: Not less than 4, wet and dry, according to AATCC 165.

10. Colorfastness to Light: Not less than 4 after 40 AFU (AATCC fading units) according to AATCC 16, Option E.
11. Electrostatic Propensity: Less than 3.5 kV according to AATCC 134.

EE.

## **2.2 INSTALLATION ACCESSORIES**

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that comply with flammability requirements for installed carpet tile, and are recommended by carpet tile manufacturer for releasable installation.
  1. Use adhesives recommended by each manufacturer.
- C. 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**

### **3.1 EXAMINATION**

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance.
- B. Examine carpet tile for type, color, pattern, and potential defects.
- C. Concrete Slabs: Verify that surfaces are free of cracks, ridges, depressions, scale, and foreign deposits.
  1. Moisture Testing: Perform tests so that each test area does not exceed 1000 sq. ft., and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
    - a. Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
    - b. Relative Humidity Test: Using in situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75percent relative humidity level measurement.
    - c. Perform additional moisture tests recommended in writing by adhesive and carpet tile manufacturers. Proceed with installation only after substrates pass testing.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. General: Comply with the Carpet and Rug Institute's CRI 104 and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile.
- B. 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.

- C. Concrete Substrates: 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 adhesive and carpet tile manufacturers.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

### **3.3 INSTALLATION**

- A. General: Comply with the Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Maintain dye-lot integrity. Do not mix dye lots in same area.
- D. Maintain pile-direction patterns indicated on Drawings
- E. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, and thresholds. Bind or seal cut edges as recommended by carpet tile manufacturer.
- F. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- G. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on carpet tile as marked on subfloor. Use nonpermanent, nonstaining marking device.
- H. Install pattern parallel to walls and borders.

### **3.4 CLEANING AND PROTECTION**

- A. Perform the following operations immediately after installing carpet tile:
  - 1. Remove excess adhesive 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.
- B. Protect installed carpet tile to comply with the Carpet and Rug Institute's CRI 104, Section 13.7.
- C. 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 096813**

## SECTION 099113

### EXTERIOR PAINTING

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Primers.
  - 2. Finish coatings.
- B. Related Requirements:
  - 1. Section 051200 "Structural Steel Framing", for shop priming of metal substrates.
  - 2. Section 055000 "Metal Fabrications" for shop priming metal fabrications.
  - 3. Section 055213 "Pipe and Tube Railings" for shop priming and painting pipe and tube railings.
  - 4. Section 099300 "Staining and Transparent Finishing" for surface preparation and application of wood stains and transparent finishes on exterior wood substrates.

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include preparation requirements and application instructions.
  - 2. Indicate VOC content.
- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches square.
  - 2. Apply coats on Samples in steps to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.
- C. Product Schedule: Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

##### 1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint Products: 5 percent, but not less than 1 gal. of each material and color applied.

##### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.



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1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

**1.6 FIELD CONDITIONS**

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

**PART 2 - PRODUCTS**

**2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Benjamin Moore & Co.
  2. Sherwin-Williams Company (The).
- B. Source Limitations: Obtain each paint product from single source from single manufacturer.

**2.2 PAINT PRODUCTS, GENERAL**

- A. Material Compatibility:
  1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer based on testing and field experience.
  2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturer for use in paint system and on substrate indicated.
- B. Colors: As selected by Architect from manufacturer's full range

**2.3 PRIMERS**

- A. Water-Based, Rust-Inhibitive Primer: Corrosion-resistant, water-based-emulsion primer formulated for resistance to flash rusting when applied to cleaned, exterior ferrous metals subject to mildly corrosive environments.
  - a. Benjamin Moore & Co.
  - b. Sherwin-Williams Company.
- B. Surface-Tolerant Metal Primer: Corrosion-resistant, solvent-based metal primer formulated for use on structural steel and metal fabrications that have been minimally prepared.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.

- C. Quick-Drying, Alkyd Metal Primer: Corrosion-resistant, solvent-based, modified-alkyd primer; lead and chromate free; formulated for quick-drying capabilities and for use on cleaned, exterior steel surfaces.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company (The).
- D. Epoxy Metal Primer: Corrosion-resistant, solvent-based, two-component epoxy primer formulated for use on prepared, exterior ferrous- and galvanized-metal surfaces.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Sherwin-Williams Company (The).

## 2.4 FINISH COATINGS

- A. Exterior Alkyd Enamel, Semigloss: Solvent-based, pigmented, alkyd enamel formulated for mold, microbial, and water resistance and for use on exterior, primed, wood and metal surfaces.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Sherwin-Williams Company (The).
  - 2. Gloss Level: Manufacturer's standard semigloss finish.
- B. Exterior Alkyd Enamel, Gloss: Solvent-based, pigmented, alkyd enamel formulated for mold, microbial, and water resistance and for use on exterior, primed, wood and metal surfaces.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company.
  - 2. Gloss Level: Manufacturer's standard gloss finish
  - 3. Fineness of Grind: Manufacturer's standard
- C. Quick-Drying Alkyd Enamel, Semigloss: Solvent-based, alkyd or modified-alkyd enamel formulated for quick-drying capabilities and for use on exterior, primed, metal and dimensionally stable wood surfaces.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company (The).

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2. Gloss Level: Manufacturer's standard semigloss finish.
- D. Exterior, Water-Based, Light Industrial Coating, Semigloss: Corrosion-resistant, water-based, pigmented, emulsion coating formulated for resistance to blocking (sticking of two painted surfaces), water, alkalis, moderate abrasion, and mild chemical exposure and for use on exterior, primed, wood and metal surfaces.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Sherwin-Williams Company (The).
  2. Gloss Level: Manufacturer's standard semigloss finish.
- E. Water-Based, Concrete-Floor Sealer: Clear, water-based, acrylic-copolymer-emulsion sealer formulated for oil, gasoline, alkali, and water resistance and for use on exterior, concrete traffic surfaces.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  1. Wood: 15 percent.
  2. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility, with finishes and primers.
- D. Proceed with coating application only after unsatisfactory conditions have been corrected.
  1. Application of coating indicates acceptance of surfaces and conditions.

#### **3.2 PREPARATION**

- A. Comply with manufacturer's written instructions applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems specified in this Section.
- D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.

- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- G. Aluminum Substrates: Remove loose surface oxidation.
- H. Wood Substrates:
  - 1. Scrape and clean knots. Before applying primer, apply coat of knot sealer recommended in writing by topcoat manufacturer for exterior use in paint system indicated.
  - 2. Sand surfaces that will be exposed to view, and remove sanding dust.
  - 3. Prime edges, ends, faces, undersides, and backsides of wood.
  - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

### **3.3 INSTALLATION**

- A. Apply paints in accordance with manufacturer's written instructions.
  - 1. Use applicators and techniques suited for paint and substrate indicated.
  - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
  - 3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  - 4. Primers specified in the Exterior Painting Schedule may be omitted on items that are factory primed or factory finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

### **3.4 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
  - 1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
  - 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
  - 3. Allow empty paint cans to dry before disposal.
  - 4. Collect waste paint by type and deliver to recycling or collection facility.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

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- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

**3.5 EXTERIOR PAINTING SCHEDULE**

A. Concrete Substrates, Traffic Surfaces:

- 1. Clear, Water-Based Sealer System:
  - a. Prime Coat: Matching topcoat.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Water-based, concrete-floor sealer.

B. Steel and Iron Substrates:

- 1. Alkyd System
  - a. Prime Coat: Alkyd metal primer
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Exterior alkyd enamel, semigloss
- 2. Quick-Drying Enamel System
  - a. Prime Coat: Quick-drying, alkyd metal primer.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Quick-drying alkyd enamel, semigloss

C. Galvanized-Metal Substrates:

- 1. Water-Based, Light Industrial Coating System
  - a. Prime Coat: Epoxy metal primer.
  - b. Intermediate Coat: Matching topcoat.
  - c. Topcoat: Exterior, water-based, light industrial coating, semigloss.

**END OF SECTION 099113**

**SECTION 099123**

**INTERIOR PAINTING**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes surface preparation and the application of paint systems on the following interior substrates:

- 1. Concrete.
- 2. Clay masonry.
- 3. Concrete masonry units (CMUs).
- 4. Steel and iron.
- 5. Galvanized metal.
- 6. Wood.
- 7. Gypsum board.
- 8. Acoustic panels and tiles.

- B. Related Requirements:

- 1. Section 051200 "Structural Steel Framing" for shop priming structural steel
- 2. Section 055000 "Metal Fabrications" for shop priming metal fabrications.
- 3. Section 055113 "Metal Pan Stairs" for shop priming metal pan stairs.
- 4. Section 055213 "Pipe and Tube Railings" for shop priming and painting pipe and tube railings.

**1.3 DEFINITIONS**

- A. MPI Gloss Level 1: Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.
- B. MPI Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- C. MPI Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- D. MPI Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.
- E. MPI Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D523.
- F. MPI Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D523.
- G. MPI Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D523.

#### **1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
  - 1. Include Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
  - 2. Indicate VOC content.
- B. Samples for Initial Selection: For each type of topcoat product.
- C. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
  - 1. Submit Samples on rigid backing, 8 inches square.
  - 2. Apply coats on Samples in steps to show each coat required for system.
  - 3. Label each coat of each Sample.
  - 4. Label each Sample for location and application area.
- D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

#### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Paint: five (5) percent, but not less than 1 gal. of each material and color applied.

#### **1.6 DELIVERY, STORAGE, AND HANDLING**

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

#### **1.7 FIELD CONDITIONS**

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements provide products by one of the following:
  - 1. Benjamin Moore & Co.
  - 2. Sherwin-Williams Company (The).
- B. Products: Subject to compliance with requirements, provide product listed in the Interior Painting Schedule for the paint category indicated.

## **2.2 PAINT, GENERAL**

- A. Material Compatibility:
  - 1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- B. Colors: As selected by Interior Designer from manufacturer's full range

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. Masonry (Clay and CMUs): 12 percent.
  - 2. Wood: 15 percent.
  - 3. Gypsum Board: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 1. Application of coating indicates acceptance of surfaces and conditions.

### **3.2 PREPARATION**

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceeds that permitted in manufacturer's written instructions.
- E. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer.



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- F. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- G. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- H. Wood Substrates:
  - 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
  - 2. Sand surfaces that will be exposed to view, and dust off.
  - 3. Prime edges, ends, faces, undersides, and backsides of wood.
  - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
  - 1. Use applicators and techniques suited for paint and substrate indicated.
  - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
  - 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
  - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
  - 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- D. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  - 1. Paint the following work where exposed in equipment rooms:
    - a. Equipment, including panelboards
    - b. Uninsulated metal piping.
    - c. Uninsulated plastic piping.
    - d. Pipe hangers and supports.
    - e. Metal conduit.
    - f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
  - 2. Paint the following work where exposed in occupied spaces:
    - a. Equipment, including panelboards.
    - b. Uninsulated metal piping.

- c. Uninsulated plastic piping.
- d. Pipe hangers and supports.
- e. Metal conduit.
- f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.

- 3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

### **3.4 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### **3.5 INTERIOR PAINTING SCHEDULE**

- A. Concrete Substrates, Traffic Surfaces:
  - 1. Water-Based Concrete Floor Sealer System
    - a. First Coat: Sealer, water based, for concrete floors, matching topcoat.
    - b. Topcoat: Sealer, water based, for concrete floors
    - c. Benjamin Moore & Co.
    - d. Sherwin-Williams Company.
- B. CMU Substrates:
  - 1. Performance Architectural Latex System
    - a. Block Filler: Block filler, latex, interior/exterior.
      - 1) Benjamin Moore & Co.
      - 2) Sherwin-Williams Company
    - b. Prime Coat: Primer, alkali resistant, water based.
      - 1) Benjamin Moore & Co.
      - 2) Sherwin-Williams Company
    - c. Intermediate Coat: Latex, interior, high performance architectural, matching topcoat.

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- d. Topcoat: Latex, interior, high performance architectural, semi-gloss (MPI Gloss Level 5).
  - 1) Benjamin Moore & Co.
  - 2) Sherwin-Williams Company >.

C. Steel Substrates:

1. Quick-Dry Enamel System MPI INT 5.1A:

- a. Prime Coat: Primer, alkyd, quick dry, for metal.
  - 1) Benjamin Moore & Co.
  - 2) Sherwin-Williams Company
- b. Intermediate Coat: Alkyd, quick dry, matching topcoat.
- c. Topcoat: Alkyd, quick dry, semi-gloss (MPI Gloss Level 5).
  - 1) Benjamin Moore & Co.
  - 2) Sherwin-Williams Company

D. Wood Substrates: Wood trim, Architectural woodwork, Doors, Windows and wood board paneling.

1. Alkyd System:

- a. Prime Coat: Primer sealer, alkyd, interior.
- b. Intermediate Coat: Alkyd, interior, matching topcoat.
- c. Topcoat: Alkyd, interior, flat (MPI Gloss Level 1):
- d. Topcoat: Alkyd, interior (MPI Gloss Level 3)].
- e. Topcoat: Alkyd, interior, semi-gloss (MPI Gloss Level 5
- f. Topcoat: Alkyd, interior, gloss (MPI Gloss Level 6..

2. Benjamin Moore & Co.

3. Sherwin-Williams Company (The).

E. Wood Substrates: Wood paneling.

1. Alkyd System MPI INT 6.4B:

- a. Prime Coat: Primer sealer, alkyd, interior.
  - 1) Benjamin Moore & Co.
  - 2) Sherwin-Williams Company

- b. Intermediate Coat: Alkyd, interior, matching topcoat.
- c. Topcoat: Alkyd, interior, semi-gloss (MPI Gloss Level 5).
  - 1) Benjamin Moore & Co.
  - 2) Sherwin-Williams Company

F. Gypsum Board Substrates:

1. Latex over Latex Sealer System

- a. Prime Coat: Primer sealer, latex, interior.
  - 1) Benjamin Moore & Co.
  - 2) Sherwin-Williams Company.
- b. Prime Coat: Latex, interior, matching topcoat.
- c. Intermediate Coat: Latex, interior, matching topcoat.
- d. Topcoat: Latex, interior, flat.
  
- e. Topcoat: Latex, interior (MPI Gloss Level 3).
  - 1) Benjamin Moore & Co.
  - 2) Sherwin-Williams Company
- f. Topcoat: Latex, interior (MPI Gloss Level 4)..
  - 1) Benjamin Moore & Co.
  - 2) Sherwin-Williams Company

G. Acoustic Panels and Tiles:

1. Latex, Flat System:

- a. Prime Coat: Latex, interior, matching topcoat.
- b. Topcoat: Latex, interior, flat (MPI Gloss Level 1)

**END OF SECTION 099123**

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**SECTION 099300**

**STAINING AND TRANSPARENT FINISHING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Primers.
2. Wood stains.
3. Transparent finishes.

B. Related Requirements:

1. Section 099123 "Interior Painting" for stains and transparent finishes on concrete floors.

**1.2 ACTION SUBMITTALS**

A. Product Data:

1. For each type of product.
2. Include preparation requirements and application instructions.
3. Indicate VOC content.

B. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of exposed finish.

C. Samples for Verification: Sample for each type of finish system and in each color and gloss of finish required on representative samples of actual wood substrates.

1. Size: 8 inches square.
2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

D. Product List: Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules. Include color designations.

**1.3 MAINTENANCE MATERIAL SUBMITTALS**

A. Extra Stock Material: Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Stains and Transparent Finishes: 5percent, but not less than 1 gal. Insert number of each material and color applied.

**1.4 DELIVERY, STORAGE, AND HANDLING**

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

### **1.5 FIELD CONDITIONS**

- A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply finishes when relative humidity exceeds 85 percent, at temperatures of less than 5 deg F above the dew point, or to damp or wet surfaces.
- C. Do not apply exterior finishes in snow, rain, fog, or mist.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Benjamin Moore & Co.
  - 2. Sherwin-Williams Company (The).

### **2.2 SOURCE LIMITATIONS**

- A. Source Limitations: Obtain each coating product from single source from single manufacturer.

### **2.3 MATERIALS, GENERAL**

- A. Material Compatibility:
  - 1. Provide materials for use within each coating system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
- B. Stain Colors: [As selected by Architect from manufacturer's full range] [Match Architect's samples] [As indicated in a color schedule] <Insert requirements>.

### **2.4 PRIMERS**

- A. Alkyd Sanding Sealer, Interior, Solvent Based, Clear: Solvent-based, quick-drying, clear, sandable alkyd sealer used on new interior wood surfaces that are to be top-coated with an alkyd varnish.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. PPG Paints; PPG Industries, Inc.
    - b. Sherwin-Williams Company (The).

### **2.5 WOOD STAINS**

- A. Stain, Exterior, Water Based, Semitransparent: Water-based, semitransparent, pigmented stain for new wood surfaces.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Benjamin Moore & Co.
  - b. Sherwin-Williams Company (The).
- B. Stain, Interior, Semitransparent, for Interior Wood: Solvent-based, oil or oil/alkyd, semitransparent, pigmented stain for new interior wood surfaces that are to be finished with a clear varnish.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. PPG Paints; PPG Industries, Inc.
    - b. Sherwin-Williams Company (The).

## 2.6 TRANSPARENT FINISHES

- A. Varnish, Interior Polyurethane, Moisture Cured, Gloss: Solvent-based, moisture-curing polyurethane clear-coating with a gloss finish for interior wood surfaces,
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company (The).
  2. Gloss Level: Manufacturer's standard gloss finish.
- B. Varnish, Interior, Polyurethane, Oil Modified, Gloss: Solvent-based, one-component, oil-modified polyurethane clear gloss varnish for new or previously varnished or stained interior wood surfaces.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Benjamin Moore & Co.
    - b. Sherwin-Williams Company (The).
  2. Gloss Level: Manufacturer's standard gloss finish.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.
- C. Maximum Moisture Content of Interior Wood Substrates: **[15] [13] [10] [9]** percent, when measured with an electronic moisture meter.



- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with finish application only after unsatisfactory conditions have been corrected.
  - 1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

### **3.2 PREPARATION**

- A. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.
  - 1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- B. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each substrate condition and as specified.
  - 1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
  - 2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.
- C. Exterior Wood Substrates:
  - 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
  - 2. Prime edges, ends, faces, undersides, and backsides of wood.
    - a. For solid hide stained wood, stain edges and ends after priming.
    - b. For varnish-coated stained wood, stain edges and ends and prime with varnish. Prime undersides and backsides with varnish.
  - 3. Countersink steel nails, if used, and fill with putty or plastic wood filler tinted to final color. Sand smooth when dried.
- D. Interior Wood Substrates:
  - 1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
  - 2. Apply wood filler paste to open-grain woods to produce smooth, glasslike finish.
  - 3. Sand surfaces exposed to view and dust off.
  - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dry.

### **3.3 APPLICATION**

- A. Apply finishes according to manufacturer's written instructions.
  - 1. Use applicators and techniques suited for finish and substrate indicated.
  - 2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
  - 3. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

- B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

### **3.4 CLEANING AND PROTECTION**

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

### **3.5 INTERIOR WOOD-FINISH-SYSTEM SCHEDULE**

- a.
- B. Wood Substrates, Wood Trim, Architectural Woodwork ,Doors, Wood Board Paneling:
  - 1. Alkyd Varnish over Stain System
    - a. Stain Coat: Stain, semitransparent, for interior wood.
    - b. First Intermediate Coat: Alkyd, sanding sealer, clear
    - c. Second Intermediate Coat: Varnish matching topcoat.
    - d. Topcoat: Varnish, interior, gloss.
- C. Wood Substrates, Wood Paneling:
  - 1. Alkyd Varnish over Stain System
    - a. Stain Coat: Stain, semitransparent, for interior wood.
    - b. First Intermediate Coat: Alkyd, sanding sealer, clear.
    - c. Second Intermediate Coat: Varnish matching topcoat.
    - d. Topcoat: Varnish, interior gloss.

**END OF SECTION 099300**

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**SECTION 101423.16**

**ROOM-IDENTIFICATION PANEL SIGNAGE**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes room-identification signs that are directly attached to the building.

**1.3 DEFINITIONS**

- A. Accessible: In accordance with the accessibility standard.

**1.4 COORDINATION**

- A. Furnish templates for placement of sign-anchorage devices embedded in permanent construction by other installers.
- B. Furnish templates for placement of electrical service embedded in permanent construction by other installers.

**1.5 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For room-identification signs.
  - 1. Include fabrication and installation details and attachments to other work.
  - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
  - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
- C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
  - 1. Include representative Samples of available typestyles and graphic symbols.
- D. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
  - 1. Room-Identification Signs: Full-size Sample.
  - 2. Variable Component Materials: Full-size Sample of each base material, character (letter, number, and graphic element) in each exposed color and finish not included in Samples above.
  - 3. Exposed Accessories: Full-size Sample of each accessory type.
  - 4. Full-size Samples, if approved, will be returned to Contractor for use in Project.
- E. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

**1.6 INFORMATIONAL SUBMITTALS**

- A. Sample Warranty: For special warranty.

**1.7 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For signs to include in maintenance manuals.

**1.8 MAINTENANCE MATERIAL SUBMITTALS**

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Variable Component Materials: 12 replaceable text inserts and interchangeable characters (letters, numbers, and graphic elements) of each type.
  - 2. Tools: One set(s) of specialty tools for assembling signs and replacing variable sign components.

**1.9 FIELD CONDITIONS**

- A. Field Measurements: Verify locations of anchorage devices and electrical service embedded in permanent construction by other installers by field measurements before fabrication, and indicate measurements on Shop Drawings.

**1.10 WARRANTY**

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Deterioration of finishes beyond normal weathering.
    - b. Deterioration of embedded graphic image.
    - c. Separation or delamination of sheet materials and components.
  - 2. Warranty Period: Five years from date of Substantial Completion.

**PART 2 - PRODUCTS**

**2.1 PERFORMANCE REQUIREMENTS**

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design".

**2.2 ROOM-IDENTIFICATION SIGNS**

- A. Room-Identification Sign: Sign system with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. ASI Sign Systems, Inc.
  - 2. Laminated-Sheet Sign: Sandblasted polymer face sheet with raised graphics laminated over subsurface graphics to phenolic backing sheet to produce composite sheet. To match existing signage in areas being installed.

- a. Composite-Sheet Thickness: Manufacturer's standard for size of sign.
  - b. Surface-Applied Graphics: Applied vinyl film.
  - c. Subsurface Graphics: Slide-in changeable insert.
  - d. Color(s): As selected by Architect from manufacturer's full range.
3. Sign-Panel Perimeter: Finish edges smooth.
- a. Edge Condition at Vertical Edges Beveled.
  - b. Corner Condition in Elevation: Square.
4. Frame: Horizontal retainers to hold changeable sign panel. To match existing signage in areas being installed
- a. Material: Aluminum.
  - b. Frame Depth: Convex-curved frame to receive removable face sheet and changeable subsurface graphics.
  - c. Profile: Square.
  - d. Corner Condition in Elevation: Square.
  - e. Finish and Color: Clear anodized. To match existing signage in areas being installed.
5. Mounting: Manufacturer's standard method for substrates indicated.
6. Text and Typeface: Accessible raised characters and Braille, typeface as indicated by manufacturer's designation.

### **2.3 SIGN MATERIALS**

- A. Aluminum Sheet and Plate: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- B. Aluminum Extrusions: ASTM B221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- C. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).
- D. Vinyl Film: UV-resistant vinyl film with pressure-sensitive, permanent adhesive; die cut to form characters and suitable for exterior applications.
- E. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

### **2.4 ACCESSORIES**

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
  1. Use concealed fasteners and anchors unless indicated to be exposed.
  2. For exterior exposure, furnish stainless-steel or hot-dip galvanized devices unless otherwise indicated.
  3. Exposed Metal-Fastener Components, General:
    - a. Fabricated from same basic metal and finish of fastened sign unless otherwise indicated.
    - b. Fastener Heads: Use flathead screws and bolts with tamper-resistant Allen-head] slots unless otherwise indicated.

4. Sign Mounting Fasteners:

- a. Concealed Studs: Concealed (blind), threaded studs welded or brazed to back of sign material or screwed into back of sign assembly unless otherwise indicated.
- b. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, and installed in predrilled holes.

B. Adhesive: As recommended by sign manufacturer.

C. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

## 2.5 FABRICATION

A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.

1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.

B. Subsurface-Applied Graphics: Apply graphics to back face of clear face-sheet material to produce precisely formed image. Image shall be free of rough edges.

C. Subsurface-Etched Graphics: Reverse etch back face of clear face-sheet material. Fill resulting copy with manufacturer's standard enamel. Apply opaque manufacturer's standard background color coating over enamel-filled copy.

D. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:

1. For snap-in changeable inserts beneath removable face sheet, furnish one suction or other device to assist in removing face sheet. Furnish initial changeable insert. Subsequent changeable inserts are by Owner.
2. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Subsequent changeable inserts are by Owner.
3. For frame to hold changeable sign panel, fabricate frame without burrs or constrictions that inhibit function. Furnish initial sign panel. Subsequent changeable sign panels are by Owner.

## 2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## **2.7 ALUMINUM FINISHES**

- A. Clear Anodic Finish: AAMA 611, Class II, 0.010 mm or thicker.
- B. Color Anodic Finish: AAMA 611, Class II, 0.010 mm or thicker.
- C. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils. Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
  - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
  - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
  - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessibility: Install signs in locations on walls according to the accessibility standard.
- C. Mounting Methods:
  - 1. Concealed Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.
    - a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place sign in position and push until flush to surface, embedding studs in holes. Temporarily support sign in position until adhesive fully sets.
    - b. Thin or Hollow Surfaces: Place sign in position and flush to surface, install washers and nuts on studs projecting through opposite side of surface, and tighten.
  - 2. Through Fasteners: Drill holes in substrate using predrilled holes in sign as template. Countersink holes in sign if required. Place sign in position and flush to surface. Install through fasteners and tighten.
  - 3. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
  - 4. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

### **3.2 ADJUSTING AND CLEANING**

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.



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- B. Remove temporary protective coverings and strippable films as signs are installed.
- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

**END OF SECTION 101423.16**

**SECTION 102113.19**

**PLASTIC TOILET COMPARTMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Solid, high-density polyethylene (HDPE) toilet compartments configured as toilet enclosures and urinal screens.
- B. Related Requirements:
  - 1. Section 102800 "Toilet, Bath, and Laundry Accessories" for accessories mounted on toilet compartments.

**1.2 COORDINATION**

- A. Coordinate requirements for overhead supports, blocking, reinforcing, and other supports concealed within wall.

**1.3 ACTION SUBMITTALS**

- A. Product Data:
  - 1. Solid-HDPE toilet compartments:
    - a. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for toilet compartments.
- B. Shop Drawings: For solid-HDPE toilet compartments.
  - 1. Include plans, elevations, sections, details, and attachment details.
  - 2. Show locations of cutouts for compartment-mounted toilet accessories.
  - 3. Show locations of centerlines of toilet fixtures.
  - 4. Show overhead support or bracing locations.
- C. Samples for Initial Selection: Manufacturer's standard color sheets, showing full range of available colors for each type of toilet compartment material indicated.
  - 1. Include Samples of hardware and accessories involving material and color selection.
- D. Samples for Verification: Actual sample of finished products for each type of toilet compartment indicated.
  - 1. Size: 3-inch-square, of same thickness indicated for Work.
  - 2. Include each type of hardware and accessory.
- E. Product Schedule: For toilet compartments, prepared by or under the supervision of supplier, detailing location and selected colors for toilet compartment material.

**1.4 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For toilet compartments.

## 1.5 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements, and coordinate before fabrication.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire Performance: Tested in accordance with, and pass the acceptance criteria of, NFPA 286.
- B. Regulatory Requirements: Comply with applicable provisions in the U.S. Department of Justice "2010 ADA Standards for Accessible Design" and ICC A117.1 for toilet compartments designated as accessible.

### 2.2 SOLID-PLASTIC (HDPE) TOILET COMPARTMENTS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide ASI Accurate Partitions an ASI Group company; Solid-Plastic (HDPE) Partitions or comparable product by one of the following:

Basis of Design Manufacturer:

- i. ASI Accurate Partitions: 160 Tower Drive, Burr Ridge, IL 60527. Tel: 708-442-6800, Fax: 708-442-7439, Web: [www.asi-accuratepartitions.com](http://www.asi-accuratepartitions.com)
- B. Other Acceptable Manufacturers:
  - ii. Bradley Corporation, Mills Metals Division, Menomonee Falls, WI 53051. Tel : (800)272-3539, fax (262)251-5817; Email [info@BradleyCorp.com](mailto:info@BradleyCorp.com); Website [www.bradleycorp.com](http://www.bradleycorp.com).

1. Products by listed manufacturers are subject to compliance with specified requirements found in specification and in Technical Data Sheet of selected ASI model and prior approval of Architect.

- C. Substitutions: See Section 016000 - Product Requirements
  - 1. Submit proposed substitutions in writing for approval by Architect minimum of ten (10) working days prior to bid date and make available to bidders. Accompany proposed substitutes with review of specification and ASI Group partition company specifications noting compliance on line-by-line basis.
  - 2. Products other than Basis of Design are subject to compliance with specified requirements and prior approval of Architect. By using products other than Basis of Design, Contractor accepts responsibility for costs associated with necessary modifications to related work, including design fees.
- D. Source Limitations: Furnish products produced by single manufacturer.
- E. Toilet-Enclosure Style: Floor anchored/overhead braced.
- F. Urinal-Screen Style: Floor mounted pilaster..
- G. Door Width: 24 inches or 36 inches at handicap stall locations.
- H. Door Height Above Floor: 12 inches.
- I. Door Panel Height: 60 inches.

- J. Pilaster Height: As indicated on Drawings.
- K. Door, Panel, Screen, and Pilaster Construction: Solid, high-density polyethylene (HDPE) panel material, not less than 1 inch thick, seamless, with eased edges, and integral no-sightline privacy system including profile on strike and hinge side that overlaps adjacent pilaster with homogenous color and pattern throughout thickness of material.
  - 1. Heat-Sink Strip: Manufacturer's standard continuous, extruded-aluminum strip fastened to exposed bottom edges of solid-HDPE components to hinder malicious combustion.
  - 2. Finish Texture: Pebble Grained.
  - 3. Color and Pattern: as selected by Interior Designer from manufacturer's full range.
- L. Pilaster Shoes: Stainless steel sheet, not less than 0.031 inch nominal thickness and 3 inches high, with No. 4 satin finish. Shoe bottom enclosed and integral to compartment structure. Secure to floor with manufacturer's recommended concrete anchors.
- M. Urinal-Screen Post: Manufacturer's standard post design of material matching the thickness and construction of pilasters or 1-3/4-inch-square aluminum tube with satin finish; with shoe.
- N. Brackets (Fittings):
  - 1. Stirrup Type: Ear or U-brackets, clear-anodized aluminum.
  - 2. Full-Height (Continuous) Type: Manufacturer's standard design; extruded aluminum.

### **2.3 HARDWARE AND ACCESSORIES**

- A. Hardware and Accessories, Standard Duty: Manufacturer's standard operating hardware and accessories.
  - 1. Material: Clear-anodized aluminum.
  - 2. Hinges: Manufacturer's standard aluminum paired, self-closing type that can be adjusted to hold doors open at any angle up to 90 degrees. allowing emergency access by lifting door.
  - 3. Latch and Keeper: Manufacturer's standard surface-mounted latch unit, designed for emergency access, and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
  - 4. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent inswinging door from hitting compartment-mounted accessories.
  - 5. Door Bumper: Manufacturer's standard rubber-tipped bumper at outswinging doors.
  - 6. Door Pull: Manufacturer's standard unit at outswinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel compatible with related materials.

### **2.4 MATERIALS**

- A. Aluminum Castings: ASTM B26/B26M.

- B. Aluminum Extrusions: ASTM B221.
- C. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304, stretcher-leveled standard of flatness.
- D. Stainless Steel Castings: ASTM A743/A743M.
- E. Zamac: ASTM B86, commercial zinc-alloy die castings.

## **2.5 FABRICATION**

- A. Fabrication, General: Fabricate toilet compartment components to sizes indicated. Coordinate requirements and provide cutouts for through-partition toilet accessories where required for attachment of toilet accessories.
- B. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
- C. Urinal-Screen Posts: Provide manufacturer's standard corrosion-resistant anchoring assemblies with leveling adjustment nuts at tops and bottoms of posts. Provide shoes and sleeves (caps) at posts to conceal anchorage.
- D. Door Size and Swings: Unless otherwise indicated, provide 24-inch-wide, inswinging doors for standard toilet compartments and 36-inch-wide, inswinging doors for compartments designated as accessible.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine areas and conditions, with Installer present, for compliance with requirements for fastening, support, alignment, operating clearances, and other conditions affecting performance of the Work.
  - 1. Confirm location and adequacy of blocking and supports required for installation.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION OF HDPE TOILET COMPARTMENTS**

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
  - 1. Maximum Clearances:
    - a. Pilasters and Panels: 1/2 inch.
    - b. Panels and Walls: 1 inch.
  - 2. Stirrup Brackets: Secure panels to walls and to pilasters with no fewer than three brackets attached at midpoint and near top and bottom of panel.
    - a. Locate wall brackets, so holes for wall anchors occur in masonry or tile joints.
    - b. Align brackets at pilasters with brackets at walls.
  - 3. Continuous Brackets: Secure panels to walls and to pilasters with full-height brackets.

- a. Locate bracket fasteners, so holes for wall anchors occur in masonry or tile joints.
  - b. Align brackets at pilasters with brackets at walls.
- B. Overhead-Braced Units: Secure pilaster shoes to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels and adjust, so tops of doors are parallel with overhead brace when doors are in closed position.
- C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

### **3.3 ADJUSTING**

- A. Hardware Adjustment: Adjust and lubricate hardware in accordance with hardware manufacturer's written instructions for proper operation. Set hinges on inswinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on outswinging doors] to return doors to fully closed position.

**END OF SECTION 102113.19**

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**SECTION 102641**  
**BULLET RESISTANT PANELS**

**PART 1 – GENERAL**

**1.1 SUMMARY**

- A. Section includes bullet resistant fiberglass panels.

**1.2 REFERENCES**

- A. American Society for Testing and Materials:
  - 1. ASTM E119-98 Standard Test for One-Hour Fire-Rating of Building Construction and Materials
  - 2. ASTM F1233-98 Standard Test Method for Forced Entry Testing of Materials/Assemblies, Class IV
- B. International Organization for Standardization:
  - 1. ISO 9001:2015 Quality Management System.
- C. National Institute of Justice Ballistic Standards:
  - 1. NIJ Standard 0108.01 – Type III-A.
- D. Small Business Administration:
  - 1. SBA Small Business Size Standard.
- E. Underwriters Laboratories:
  - 1. UL 752 Specifications and Ammunition, 11th Edition, Standard for Bullet Resisting Equipment published September 9, 2005, revised December 21, 2006, Level 3.
- F. The United States Department of State:
  - 1. The International Traffic in Arms Regulations (ITAR).

**1.3 SUBMITTALS**

- A. Submittals for Review: Submit for approval prior to fabrication.
  - 1. Product Data: Include specifications, brochures, and samples.
  - 2. Recommendations for installation of Bullet Resistant Fiberglass Panels available in print document and video link.
- B. Certificates: Submit printed data to indicate compliance with following requirements.
  - 1. UL LISTING Verification and UL752 Current Test Results as provided by Underwriters Laboratories.
  - 2. ASTM E119-98 One-Hour Fire Rating of Building Construction and Materials.
  - 3. ASTM F1233-98 Standard Test Method for Forced Entry Testing of Materials/Assemblies.
  - 4. Manufacturer's third party certificate of registration with ISO 9001:2015.
  - 5. Manufacturer's U.S. Dept. of State ITAR Statement of Registration.
  - 6. Manufacturer's SBA Profile verifying small business status by the SBA.

**1.4 DELIVERY, HANDLING, AND STORAGE**

- A. Deliver materials to project with manufacturer's UL LISTED Labels intact and legible.



- B. Handle material with care to prevent damage. Store materials inside under cover, stack flat and off the floor.

## **1.5 WARRANTY**

- A. Warrant all materials and workmanship against defects for a period of ten (10) years from the date of Substantial Completion.

## **PART 2 – PRODUCTS**

### **2.1 MANUFACTURER**

- A. North American Bullet Proof, 106 Guadalupe Drive, P.O. Box 628, Cibolo, TX 78108. Phone 888.746.8427, Fax 210.225.0984.
- B. Chicago Bullet Proof Systems, 2595 Bond Street, University Park, IL 60484, Phone:708-534-9102, Fax: 708-534-9132.

### **2.2 PERFORMANCE CRITERIA**

- A. Bullet Resistant Fiberglass Panels shall be “non ricochet type” to permit the encapture and retention of an attacking projectile lessening the potential of a random injury or lateral penetration.
- B. Panel Rating: UL752 Level 3. Refer to Drawings for locations.
- C. Bullet resistance of joints: equal to that of the panel.

### **2.3 MATERIALS**

- A. Panels fabricated of multiple layers of woven roving ballistic grade fiberglass cloth impregnated with a thermoset polyester resin and compressed into flat rigid sheets.
- B. Thickness: 1-1/8” nominal thickness
- C. Nominal Weight: 5 lbs. per sq. ft.
- D. Available Panel Sizes: 3’ x 10’, 4’ x 10’, or 5’ x 10’.
- E. Panels manufactured in the United States of America with raw materials sourced from the U.S.A. for quality assurance purposes and to comply with any applicable “Buy American” provisions.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Prior to starting installation, verify work of related trades required in contract documents and architectural drawings is complete to the point where work of this Section may properly commence.

**3.2 JOINTS**

- A. Reinforce joints with a back-up layer of bullet resistive material. Minimum width of reinforcing layer at joint shall be 4-inches, centered on panel joints.

**3.3 APPLICATION**

- A. Install armor in accordance with manufacturer's printed recommendations and as required by contract documents.
- B. Secure armor panels using screws, bolts, or an industrial adhesive.
  - 1. Method of application shall install panels minimizing vulnerabilities by fitting tightly to adjacent surfaces including concrete floor slab, concrete roof slab, bullet resistive door frames, bullet resistive window frames, and the like.

**END OF SECTION 102641**

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**SECTION 102800**

**TOILET, BATH, AND LAUNDRY ACCESSORIES**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Public-use washroom accessories.
  - 2. Hand dryers.
  - 3. Underlavatory guards.
  - 4. Custodial accessories.

**1.3 COORDINATION**

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
  - 2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
  - 3. Include electrical characteristics.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Sample Warranty: For manufacturer's special warranties.

**1.6 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For accessories to include in maintenance manuals.

**1.7 WARRANTY**

- A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, visible silver spoilage defects.
  - 2. Warranty Period: 5 years from date of Substantial Completion.

## **PART 2 - PRODUCTS**

### **2.1 OWNER FURNISHED MATERIALS**

- A. Owner-Furnished Materials: Owner is to furnish and the Contractor is to install the following toilet accessories: Toilet tissue dispensers, soap dispensers, and paper towel dispensers. The remaining toilet accessories are to be furnished and installed by the Contractor. Contractor to provide blocking for all toilet accessories.

### **2.2 PERFORMANCE REQUIREMENTS**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Structural Performance: Design accessories and fasteners to comply with the following requirements:
1. Grab Bars: Installed units are able to resist 250 lbf concentrated load applied in any direction and at any point.
  2. Shower Seats: Installed units are able to resist 360 lbf applied in any direction and at any point.

### **2.3 PUBLIC-USE WASHROOM ACCESSORIES**

- A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.
- B. Toilet Tissue (Roll) Dispenser : To be furnished by Owner and installed by Contractor.
- C. Paper Towel (Folded) Dispenser and Holder: To be furnished by Owner and installed by Contractor.
- D. Waste Receptacle To be furnished and installed by Contractor.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bradley Corporation.
  2. Mounting: Semi-recessed.
  3. Minimum Capacity: 12 gallon.
  4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin)
  5. Liner: Reusable vinyl liner
  6. Lockset: Tumbler type for waste receptacle.
- E. Soap Dispenser: To be furnished by Owner and installed by Contractor.
- F. Grab Bars: To be furnished and installed by Contractor.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bradley Corporation.
  2. Mounting: Flanges with concealed fasteners.

3. Material: Stainless steel, 0.05 inch thick.
    - a. Finish: Smooth, ASTM A480/A480M No. 4 finish (satin).
  4. Outside Diameter: 1-1/4 inches.
  5. Configuration and Length: As indicated on Drawings.
- G. Sanitary-Napkin Disposal Unit : To be furnished and installed by Contractor.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bradley Corporation.
  2. Mounting: Recessed
  3. Door or Cover: Self-closing, disposal-opening cover
  4. Receptacle: Removable.
  5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin)
- H. Mirror Unit: To be furnished and installed by Contractor.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bradley Corporation.
  2. Frame: Stainless steel channel.
    - a. Corners: Manufacturer's standard.
  3. Size: As indicated on Drawings.
- I. Hook To be furnished and installed by Contractor.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bradley Corporation.
  2. Description: Single-prong unit.
  3. Mounting: Concealed.
  4. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin.)

## 2.4 CHILDCARE ACCESSORIES

- A. Source Limitations: Obtain childcare accessories from single source from single manufacturer.
- B. Diaper-Changing Station >: To be furnished and installed by Contractor.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. American Specialties, Inc.
- b. Bradley Corporation.
2. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap.
  - a. Engineered to support minimum of 250-lb static load when opened.
3. Mounting: Surface mounted, with unit projecting not more than 4 inches from wall when closed.
4. Operation: By pneumatic shock-absorbing mechanism.
5. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin), exterior shell with rounded plastic corners; HDPE interior in manufacturer's standard color
6. Liner Dispenser: Provide built-in dispenser for disposable sanitary liners.

## 2.5 UNDERLAVATORY GUARDS

- A. Underlavatory Guard: To be furnished and installed by Contractor.
  1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Truebro by IPS Corporation.
  2. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
  3. Material and Finish: Antimicrobial, molded plastic, white.

## 2.6 CUSTODIAL ACCESSORIES

- A. Source Limitations: Obtain custodial accessories from single source from single manufacturer.
- B. Custodial Utility Shelf : To be furnished and installed by Contractor.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bradley Corporation.
  2. Description: With exposed edges turned down not less than 1/2 inch and supported by two triangular brackets welded to shelf underside.
  3. Size: 16 inches long by 6 inches deep
  4. Material and Finish: Not less than nominal 0.05-inch-thick stainless steel, ASTM A480/A480M No. 4 finish (satin).
- C. Custodial Mop and Broom Holder : To be furnished and installed by Contractor.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. American Specialties, Inc.
    - b. Bradley Corporation.
  2. Description: Unit with shelf, hooks, holders, and rod suspended beneath shelf
  3. Length: 36 inches.

4. Hooks: Four
5. Mop/Broom Holders: Three spring-loaded, rubber hat, cam type.
6. Material and Finish: Stainless steel, ASTM A480/A480M No. 4 finish (satin).
  - a. Shelf: Not less than nominal 0.05-inch-thick stainless steel.
  - b. Rod: Approximately 1/4-inch-diameter stainless steel.

## **2.7 MATERIALS**

- A. Stainless Steel: ASTM A240/A240M or ASTM A666, Type 304, 0.031-inch-minimum nominal thickness unless otherwise indicated.
- B. Fasteners: Screws, bolts, and other devices of same material as accessory unit, unless otherwise recommended by manufacturer or specified in this Section, and tamper and theft resistant where exposed, and of stainless or galvanized steel where concealed.
- C. Mirrors: Tempered glass mirrors, nominal 6.0 mm thick.

## **2.8 FABRICATION**

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six (6) keys to Owner's representative.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
  1. Remove temporary labels and protective coatings.
- B. Grab Bars: Install to comply with specified structural-performance requirements.
- C. Shower Seats: Install to comply with specified structural-performance requirements.

### **3.2 ADJUSTING AND CLEANING**

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Clean and polish exposed surfaces according to manufacturer's written instructions.

**END OF SECTION 102800**



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## SECTION 104413

### FIRE PROTECTION CABINETS

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

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

##### 1.2 SUMMARY

- A. Section Includes:
  - 1. Fire-protection cabinets for the following:
    - a. Portable fire extinguisher.
- B. Related Requirements:
  - 1. Section 104416 "Fire Extinguishers" for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets
    - a. .

##### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed method and relationships of box and trim to surrounding construction.
- B. Shop Drawings: For fire-protection cabinets.
  - 1. Include plans, elevations, sections, details, and attachments to other work.

##### 1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

##### 1.5 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

#### PART 2 - PRODUCTS

##### 2.1 MANUFACTURERS

- A. Source Limitations: Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

## 2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## 2.3 FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Larsens Manufacturing Company, 7421 Commerce Lane N.E. Minneapolis, MN 55432, (763) 571-1181 or (800)527-7367.
- B. Cabinet Construction: . Match rating of wall being installed in.
  - 1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.043-inch-thick cold-rolled steel sheet lined with minimum 5/8-inch-thick fire-barrier material. Provide factory-drilled mounting holes.
- C. Cabinet Material: Cold-rolled steel sheet.
- D. Recessed Cabinet:
  - 1. Trimless with Concealed Flange: Surface of surrounding wall finishes flush with exterior finished surface of cabinet frame and door, without overlapping trim attached to cabinet. Provide recessed flange, of same material as box, attached to box, to act as drywall bead.
- E. Cabinet Trim Material: Same material and finish as door.
- F. Door Material: Steel sheet..
- G. Door Style: Vertical duo panel with frame.
- H. Door Glazing: Tempered break glass.
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
  - 1. Provide manufacturer's standard.
  - 2. Provide manufacturer's standard hinge, permitting door to open 180 degrees.
- J. Accessories:
  - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  - 2. Break-Glass Strike: Manufacturer's standard metal strike, complete with chain and mounting clip, secured to cabinet.
  - 3. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle
  - 4. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated

- a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER".
  - 1) Location: Applied to cabinet door.
  - 2) Application Process: Pressure-sensitive vinyl letters.
  - 3) Lettering Color: Black.
  - 4) Orientation: Type A.

K. Materials:

1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
2. Finish: [Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
3. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
4. Color: As selected by Architect from manufacturer's full range.
5. Tempered Break Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 1.5 mm thick.

## 2.4 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
  1. Weld joints and grind smooth.
  2. Miter corners and grind smooth.
  3. Provide factory-drilled mounting holes.
  4. Prepare doors and frames to receive locks.
  5. Install door locks at factory.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
  1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
  2. Miter and weld perimeter door frames and grind smooth.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

## 2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. Prepare recesses for recessed fire-protection cabinets as required by type and size of cabinet and trim style.

#### **3.3 INSTALLATION**

- A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at height indicated below:
  - 1. Fire-Protection Cabinets: 40 lbs, or less fire extinguishers mount at 60 inches above finished floor to top of fire extinguisher, For those weighing more than 40 lbs., mount at 42 inches above finished floor to top of fire extinguisher.
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
  - 1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.
  - 2. Provide inside latch and lock for break-glass panels.
  - 3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
- C. Identification:
  - 1. Apply vinyl lettering at locations indicated.

#### **3.4 ADJUSTING AND CLEANING**

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION 104413**

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**SECTION 104416**

**FIRE EXTINGUISHERS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.
- B. Related Requirements:
  - 1. Section 104413 "Fire Protection Cabinets."

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
- B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function. Use same designations indicated on Drawings.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Warranty: Sample of special warranty.

**1.5 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

**1.6 COORDINATION**

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

**1.7 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Faulty operation of valves or release levers.
  - 2. Warranty Period: Six (6) years from date of Substantial Completion.



## **PART 2 - PRODUCTS**

### **2.1 PERFORMANCE REQUIREMENTS**

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
  - 1. Provide fire extinguishers approved, listed, and labeled by FM Global.

### **2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS**

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Larsens Manufacturing Company, 7421 Commerce Lane N.E.  
Minneapolis, MN 55432, (763) 571-1181 or (800)527-7367.
  - 2. Source Limitations: Obtain fire extinguishers, fire-protection cabinets, and accessories, from single source from single manufacturer.
  - 3. Valves: Manufacturer's standard.
  - 4. Handles and Levers: Manufacturer's standard.
- B. Multipurpose Dry-Chemical Type in Brass Container ,UL-rated [4-A:80-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in chrome-plated-brass container.

### **2.3 MOUNTING BRACKETS**

- A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated finish.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the following:
    - a. Larsens Manufacturing Company.
  - 2. Source Limitations: Obtain mounting brackets and fire extinguishers from single source from single manufacturer.
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
  - 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
  1. Mounting Brackets: 40 lbs, or less fire extinguishers mount at 60 inches above finished floor to top of fire extinguisher, For those weighing more than 40 lbs., mount at 42 inches above finished floor to top of fire extinguisher.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

**END OF SECTION 104416**

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**SECTION 123661.16**

**SOLID SURFACING COUNTERTOPS**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Section Includes:
  - 1. Solid surface material countertops.
  - 2. Solid surface material backsplashes.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For countertop materials.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
  - 1. Show locations and details of joints.
  - 2. Show direction of directional pattern, if any.
- C. Samples for Initial Selection: For each type of material exposed to view.
- D. Samples for Verification: For the following products:
  - 1. Countertop material, 6 inches square.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For fabricator.

**1.5 CLOSEOUT SUBMITTALS**

- A. Maintenance Data: For solid surface material countertops to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

**1.6 QUALITY ASSURANCE**

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate countertops similar to that required for this Project, and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of countertops.

**1.7 FIELD CONDITIONS**

- A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

## **1.8 COORDINATION**

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

## **PART 2 - PRODUCTS**

### **2.1 SOLID SURFACE COUNTERTOP MATERIALS**

- A. Solid Surface Material: Homogeneous-filled plastic resin complying with ICPA SS-1.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following: Refer to drawings for location/manufacturer color used.
    - a. DuPont – Corian: Bone
  - 2. Type: Provide Standard type or Veneer type made from material complying with requirements for Standard type, as indicated unless Special Purpose type is indicated.
  - 3. Colors and Patterns: As indicated on drawings by Interior Designer..
- B. Plywood: Exterior softwood plywood complying with DOC PS 1, Grade C-C Plugged, touch sanded.

### **2.2 COUNTERTOP FABRICATION**

- A. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
  - 1. Grade: Premium.
- B. Configuration:
  - 1. Front: 1/4-inch bullnose.
- C. Countertops: 3/4-inch thick, solid surface material with front edge built up with same material.
- D. Backsplashes: 3/4-inch- thick, solid surface material
- E. Joints: Fabricate countertops without joints.
- F. Cutouts and Holes:
  - 1. Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
    - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch into fixture opening.
    - b. Provide vertical edges, rounded to 3/8-inch radius at juncture of cutout edges with top surface of countertop, slightly eased at bottom, and projecting 3/16 inch into fixture opening.
    - c. Provide 3/4-inch full bullnose edges projecting 3/8 inch into fixture opening.

### **2.3 INSTALLATION MATERIALS**

- A. Adhesive: Product recommended by solid surface material manufacturer.
- B. Sealant for Countertops: Comply with applicable requirements in Section 079200 "Joint Sealants."

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine substrates to receive solid surface material countertops and conditions under which countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of countertops.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION**

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet, 1/4 inch maximum. Do not exceed 1/64-inch difference between planes of adjacent units.
- B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Predrill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
- C. Secure countertops to subtops with adhesive according to solid surface material manufacturer's written instructions. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
- D. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
- E. Install backsplashes and end splashes by adhering to wall and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears.
- F. Install aprons to backing and countertops with adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Fasten by screwing through backing. Predrill holes for screws as recommended by manufacturer.
- G. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

**END OF SECTION 123661.16**

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**SECTION 123661.19**

**QUARTZ SURFACING COUNTERTOPS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

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

**1.02 THIS SECTION INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING HORIZONTAL AND TRIM QUARTZ SURFACING PRODUCT TYPES:**

- 1. Countertops

**1.03 RELATED REQUIREMENTS**

- A. Section 06 10 00 – Rough Carpentry
- B. Section 079200 – Joint Sealants
- C. Section 12366116 – Solid Surfacing Countertops

**1.04 REFERENCES**

- A. CSA B45/IAPMO ANSI Z124 (previously ANSI Z124.6 – Plastic Sinks).
    - 1. CSA B45/IAPMO ANSI Z124 Section 5.7.1.3 – Point Impact tests.
  - B. ASTM C170 – Standard Test Method for Compressive Strength of Dimension Stone.
  - C. ASTM C370 – Standard Test Method for Moisture Expansion of Fired Whiteware Products.
  - D. ASTM C373 – Standard Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products, Ceramic Tiles, and Glass Tiles.
  - E. ASTM C501 – Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abraser.
  - F. ASTM C1026 – Standard Test Method for Measuring the Resistance of Ceramic Tile to Freeze-Thaw Cycling.
  - G. ASTM C1028 – Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
  - H. ASTM D570 – Standard Test Method for Water Absorption of Plastics.
  - I. ASTM D696 – Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C with a Vitreous Silica Dilatometer.
  - J. ASTM D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
  - K. ASTM D792 – Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
  - L. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
  - M. ASTM G21 – Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
  - N. ASTM G22 – Standard Practice for Determining Resistance of Plastics to Bacteria.
  - O. CSA B45.5-11/IAPMO Z124-2011 – Plastic Plumbing Fixtures.
  - P. NEMA LD 3 – High Pressure Decorative Laminates.
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PROPOSED RENOVATION & ADDITION  
COLUMBIA COUNTY JUSTICE CENTER  
EVANS, GEORGIA

1. NEMA LD 3-3.3 – Light Resistance.
  2. NEMA LD 3-3.5 – Boiling Water Resistance.
  3. NEMA LD 3-3.6 – High Temperature Resistance.
  4. NEMA LD 3-3.8 – Ball Impact Resistance.
- Q. NFPA (National Fire Protection Association) - NFPA 101®, Life Safety Code®.
- R. NFPA 255 – Standard Method of Test of Surface Burning Characteristics of Building Materials.
- S. ISO (International Organization for Standardization) - ISO 14001 – Environmental Management Systems.
- T. UL (Underwriters Laboratories) - UL 723 – Standard Test Method for Surface Burning Characteristics of Building Materials.

### 1.05 SUBMITTALS

- A. Submit product data for each type of product indicated.
1. Submit manufacturer's product data on material characteristics, performance properties, fabrication instructions, installation instructions and maintenance instructions.
- B. Shop drawings:
1. Show location of each item; provide complete detailed and dimensioned plans and elevations, large-scale details, attachment devices and other components.
    - a. Show the following:
      - 1) Full-size details, edge details, attachments, etc.
      - 2) Locations and sizes of furring, blocking, including concealed blocking and reinforcement specified in other Sections.
      - 3) Fabrication details for brackets.
      - 4) Locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacle and other items installed in quartz surface.
      - 5) Locations and sizes of cutouts for sink installation and lavatory installation.
      - 6) Type of sealant.
      - 7) Type of adhesive.
      - 8) Seam locations.
- C. Samples:
1. For each type of product indicated:
    - a. Submit minimum 2-inch-by-2-inch sample in specified color. For viewing pattern or veining, submit minimum 4-inch-by-4-inch samples.
    - b. Cut sample and seam together for representation of seaming techniques.
    - c. Indicate full range of color and pattern variation.
    - d. Approved samples will be retained as a standard for work.
- D. Product data:
1. Indicate product description, fabrication information and compliance with specified performance requirements.
- E. Maintenance data:
1. Submit manufacturer's care and maintenance data.
  2. Include in project closeout documents.

### 1.06 QUALITY ASSURANCE

- A. Qualifications:
- a. Shop 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.
- B. Fabricator/installer qualifications:
1. Work of this section shall be by a certified fabricator/installer, certified in writing by the manufacturer or designated representative.
- C. Allowable tolerances:
1. Variation in component size:  $\pm 1/8$  inch (3 mm) over a 10 foot length.
  2. Location of openings:  $\pm 1/8$  inch (3 mm) from indicated location.

3. Minimum of 1/16 inch and a maximum of 1/8 inch (3 mm) clearance between quartz surfaces and each wall.
- D. Coordination drawings:
  1. Shall be prepared indicating:
    - a. Indicate location of all walls (rated and non-rated), blocking locations and recessed wall items, etc.
  2. Content:
    - a. Project-specific information, drawn accurately to scale.
    - b. Do not base coordination drawings on reproductions of the contract documents or standard printed data.
    - c. Indicate dimensions shown on the contract drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements.
    - d. Provide alternate sketches to designer for resolution of such conflicts.
      - 1) Minor dimension changes and difficult installations will not be considered changes to the contract.
  3. Drawings shall:
    - a. Be produced in 1/2 inch scale for all fabricated items.
  4. Drawings must be complete and submitted to the architect within 60 days after award of contract for record only.
    - a. No review or approval will be forthcoming.
    - b. Coordination drawings are required for the benefit of contractor's fabricators/installers as an aid to coordination of their work to eliminate or reduce conflicts that may arise during the installation of their work.

#### **1.07 DELIVERY, STORAGE AND HANDLING**

- A. Deliver no components to project site until areas are ready for installation.
- B. Store components indoors in clean and dry area prior to installation.
- C. Handle materials to prevent damage to finished surfaces.
- D. Follow manufacturer's safe handling and storage recommendations.
- E. Provide protective coverings to prevent physical damage or staining following installation for duration of project.

#### **1.08 WARRANTY**

- A. Provide manufacturer's 10-year warranty.
- B. Damage caused by physical or chemical abuse or damage from excessive heat will not be warranted.

#### **1.09 MAINTENANCE**

- A. Provide maintenance requirements as specified by the manufacturer.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Contract Documents are based on products manufactured by DuPont (E. I. du Pont de Nemours and Company). Provide Corian® Quartz, formerly known as Zodiaq® (basis of design) subject to compliance with the requirements.
  - a. Address: Corian® Design, Corian® Quartz, Chestnut Run Plaza 735, 974 Centre Road, P.O. Box 2915, Wilmington, DE 19805.
  - b. Phone: (800) 426-7426.
  - c. Website: [www-surfaces.dupont.com](http://www-surfaces.dupont.com); [www.corianquartz.com](http://www.corianquartz.com).
  - d. Subject to compliance with the requirements, provide the following product: quartz surface from Corian® Design (basis of design).

B. Substitutions: Not permitted.

**2.02 MATERIALS**

A. Material:

1. Corian® Quartz material composed of ~93 % natural quartz with pigments and resin.
2. Corian® Quartz Terra Collection product composed of pre-consumer and/or post-consumer glass, natural quartz, pigments and resin.
3. Material shall have minimum physical and performance properties as specified.

B. Thickness:

1. 2 cm (3/4 inch).

C. Edge treatment:

1. Exposed Edge
  - a. As indicated.

D. Seam width:

1. 1/16 inch nominal unless otherwise specified.

E. Corian® Quartz Performance Properties (TYPICAL RESULTS):

1. Flexural Strength	> 5,300 psi	ASTM D790
2. Flexural Modulus	5.3–5.7 X 106 psi	ASTM D790
3. Compression Strength (Dry)	27,300 psi	ASTM C170
4. Compression Strength (Wet)	24,400 psi	ASTM C170
5. Hardness	7	Mohs Hardness Scale
6. Thermal Expansion	1.45 x 10-5 meter/meter deg C	ASTM D696
7. Thermal Expansion	2.61 x 10-5 inch/inch deg F	ASTM D696
8. Colorfastness	Passes	NEMA LD 3-3.3
9. Gloss (60° Gardner)	45–50	ANSI Z124
10. Wear and Cleanability Passes	CSA B45.5-11/IAPMO Z124-2011	
11. Stain Resistance	Passes	CSA B45.5-11/IAPMO Z124-2011
12. Fungal Resistance	No observed growth on product	ASTM G 21
13. Bacterial Resistance	No observed growth on product	ASTM G 22
14. High Temperature Resistance	None to slight effect	NEMA LD 3-3.6
a. Temperature, 356 deg F		
15. Boiling Water Resistance	None to slight effect	NEMA LD 3-3.5
16. Freeze-Thaw Cycling	Unaffected	ASTM C1026
17. Point Impact	Passes	ANSI Z124.6.4.2
18. Ball Impact Resistance	No failure at 164 inches	NEMA LD 3-3.8
a. Slabs, No fracture, 1/2 lb. ball – 2cm and 3 cm		
19. Static Coefficient of Friction	0.89 (Dry), 0.61 (Wet)	ASTM C1028
20. Abrasion Resistance	139	ASTM C501
21. Density	2.4 g/cm3	ASTM D792
22. Water Absorption, Long-term	0.12%	ASTM C373
23. Water Absorption, Short	< 0.04%	ASTM C373
24. Moisture Expansion	< 0.01% average	ASTM C370
25. Flammability	Class A, all colors	NFPA 101® Life Safety Code
26. Flame Spread Index	FSI 0 for 3 cm	UL 723
27. Flame Spread Index	FSI ≤ 5 for 2 cm	UL 723
28. Smoke Developed Index	SDI ≤ 40 for 3 cm	UL 723
29. Smoke Developed Index	SDI ≤ 75 for 2 cm	UL 723
30. Flame Spread Value	0 for 3 cm	CAN/ULC-S102
31. Flame Spread Value	5 for 2 cm	CAN/ULC-S102
32. Smoke Developed Value	10 for 3 cm	CAN/ULC-S102
33. Smoke Developed Value	50 for 2 cm	CAN/ULC S102
34. Nominal Thickness	2 cm and 3 cm	
35. Nominal Weight per square foot for 2cm thickness is 10 pounds		
36. Nominal Weight per square foot for 3cm thickness is 15 pounds		

**2.03 ACCESSORY PRODUCTS**

- A. Mounting Adhesives:
  - 1. 100 percent Silicone Sealant.
- B. Seam Adhesive:
  - 1. Corian® Joint Adhesive to create color-coordinated seam.

**2.04 FABRICATION**

- A. Fabricate components to greatest extent practical to sizes and shapes indicated, in accordance with approved shop drawings and manufacturer's printed instructions and technical bulletins.
- B. Form joints between components using manufacturer's standard joint adhesive.
  - a. Reinforce as required.
  - 2. Provide factory cutouts for plumbing fittings and bath accessories as indicated on the drawings.
  - 3. Rout and finish component edges with clean, sharp returns.
  - 4. Rout cutouts, radii and contours to template.
- C. Smooth edges.

**2.05 FINISHES**

- A. Select from the manufacturer's standard color chart.
  - 1. Color:
    - a. [ Valente Pearl \_\_\_\_\_ ]

**PART 3 - EXECUTION**

**3.01 INSTALLATION**

- A. General
  - 1. Install countertop materials in accordance with manufacturer's instructions.
  - 2. Additional weight from attached sink or lavatory will affect maneuverability of tops during transportation and installation.
  - 3. Carefully plan work to avoid damaging finished tops during transportation and installation.
- B. Install components plumb and level, in accordance with approved shop drawings and product installation details.
  - 1. Tops:
    - a. Flat and true to within 1/8 inch (3 mm) of a flat surface over a 10-foot length.
    - b. Allow a minimum of 1/16 inch to a maximum of 1/8 inch (3 mm) clearance between surface and each wall.
    - c. Form field joints using manufacturer's recommended adhesive (Corian® Joint Adhesive), with joint widths no greater than 1/8 inch (3 mm) in finished work.
    - d. Keep components and hands clean when making joints.

**3.02 CLEANING AND PROTECTION**

- A. Keep components and hands clean during installation.
- B. Remove adhesives, sealants and other stains in accordance with manufacturer's instructions.
  - 1. Clean exposed surfaces in accordance with manufacturer's instructions.
  - 2. Components shall be clean on date of substantial completion.
    - a. Protect surfaces from damage until date of substantial completion.
  - 3. Replace or repair damaged work in a satisfactory manner.

**3.03 SCHEDULE**

- A. Countertops:
  - 1. Location: [ Courtrooms – Casework Countertops \_\_\_\_\_ ]
  - 2. Quartz surface is adhesively joined with exposed seams.
    - a. Color: [ Valente Pearl \_\_\_\_\_ ]

PROPOSED RENOVATION & ADDITION  
COLUMBIA COUNTY JUSTICE CENTER  
EVANS, GEORGIA

**END OF SECTION 123661.19**

**SECTION 124920**

**MANUAL ROLLER SHADES**

**PART 1 – GENERAL**

**1.1 SUMMARY**

- A. Section includes
  - 1. Manually operated Roller Shades
- B. Related work includes the following:
  - 1. Section 061000: Rough Carpentry
  - 2. Section 084313: Aluminum Framed Storefronts.
  - 3. Section 130700.23: Bullet Resistant Aluminum Fixed View Window Frames

**1.2 SUBMITTALS**

- A. Subject under provisions of Section 013300 – Submittal Procedures.
- B. Product Data: Manufacturer's data sheets shall be submitted for each product specified, including:
  - 1. Preparation instructions and recommendations.
  - 2. Finishes, material descriptions, dimensions of individual components.
  - 3. Construction and installation instructions.
  - 4. Manufacturer's recommendations for maintenance and cleaning.
- C. Drawings and Diagrams: Product details, installation details, working and assembly drawings shall be supplied as requested.
- D. Sample: Responsible contracting officer or agent shall supply one sample shade of each type specified in this contract for approval. Supplied units shall be furnished complete with all required components, mounting and associated hardware, instructions and warranty.

**1.3 QUALITY ASSURANCE**

- A. Supplier: Manufacturer, subsidiary or licensed agent shall be approved to supply the products specified, and to honor any claims against product presented in accordance with warranty.
- B. Installer: Installer or agent shall be qualified to install specified products by prior experience, demonstrated performance and acceptance of requirements of manufacturer, subsidiary, or licensed agent. Installer shall be responsible for an acceptable installation.
- C. Uniformity: Provide Manual Roller Shades of only one manufacturer for entire project.
- D. Mock up: Provide (1) mock-up shade for each roller shade type/assembly specified.

**1.4 DELIVERY, STORAGE AND HANDLING**

PROPOSED RENOVATION & ADDITION  
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EVANS, GEORGIA

- A. Product shall be delivered to site in manufacturer's original packaging.
- B. Product shall be handled and stored to prevent damage to materials, finishes and operating mechanisms.

**1.5 JOB CONDITIONS**

- A. Prior to shade installation, building shall be enclosed.
- B. Interior temperature shall be maintained between 60° F. and 90° F. during and after installation; relative humidity shall not exceed 80%. Wet work shall be complete and dry.

**1.6 WARRANTY**

- A. Lifetime Limited Warranty. Fabrics warranted for 5 years. Specific product warranties available from manufacturer or its authorized agent.

**PART 2 – PRODUCTS**

**2.1 ACCEPTABLE MANUFACTURER**

- A. Hunter Douglas Contract/ 12250 Parkway Centre Dr. / Poway, CA 92064/ Phone: 800-727-8953 Fax: 800-205-9819/ Website: [www.hunterdouglascontract.com](http://www.hunterdouglascontract.com), or architect approved equivalent. Contact the following for project assistance and dealer referral @ 800-964-2580: (Mideast/Midwest) Keith Burgess ext. #827311, (Southern/Central) Christopher Hagen ext. #827312, (Western/Mountain/Upper Midwest) David Cover ext. #827313, (Northeast) Patrick LeClair ext. #827314, (Southwest) Matthew Craven ext. #827317, (Southern Atlantic) Carol Addison ext. #827320.
- B. Request for substitutions must be approved by architect minimum of 30 days prior to close of bid.

**2.2 MANUAL ROLLER SHADES**

- A. PRODUCT: Hunter Douglas Contract "RB 500 Manual Roller Shades"
- B. MATERIALS:
  - 1. FABRICS: Inherently anti-static, flame retardant, fade and stain resistant, light filtering, room darkening, & blackout fabrics providing 3% openness factors. Fabric weights to range between 6.00 oz/sq.yd. – 20.70 oz/sq.yd., containing fiberglass, PVC, polyester, acrylic, vinyl laminates, cotton, & vinyl coatings. Finish selected by architect from manufacturer's available contract colors.
  - 2. CONTROL SYSTEMS:
    - A. CLUTCH OPERATED: Engineered heavy duty chain drive pulley operating system consisting of metal clutch housing and locking plug containing minimum 6 ribs and inserted at minimum of 2-1/4" into roller tube. Lift torque enhancement provided by Counter Balance System with integrated spring support module. Utilization of adjustment-free continuous qualified T304 stainless steel ball chain with 110 lbs breaking strength for precise control, smooth operation and ensuring a uniform look. Chain tensioner to be compliant with WCMA safety standard A100.1-2010 and must prevent the clutch system from moving the roller shade

through lowering and raising if not properly installed as specified in ANSI Standard Section 6.5.2. Components will be maintenance free from adjustments or lubrication for trouble-free operation.

3. ROLLER TUBE: Circular-shaped aluminum tube extruded from alloy and temper 6063 T-6. 2" outside diameter extruded tube to have a .063" wall thickness (2.5" outside diameter to have a .079" wall thickness). Heavily reinforced with minimum six internal ribs providing additional tensile strength and allows for secure placement of clutch & end plug.
5. HEAVY DUTY TUBE BEARING PLUG: Die cast metal and reinforced idler assembly containing spring loaded end plug with positive locking wheel allows for up to 7/8" adjustment and provides for a secure installation and removal of shade. Locking tube bearing plug contains minimum 6 ribs and inserted a minimum of 2-3/8" into roller tube.
4. BOTTOM BAR: Extruded aluminum weight in a Sealed Pocket Hem Bar, or RB Bottom Bar for fabrics that are not seamable. Bottom bar is for tracking adjustments and provides uniform look.
5. MOUNTING HARDWARE: Manufacturer's standard heavy duty bracket constructed of hardened 1/8" thick steel to support full weight of shade with bracket & screw hole covers to provide uniform look. Integrated leveling device for enhanced level adjustment of overall shade. Locking mechanism on bracket adapter provides for a secure installation and removal of the shade.
6. FASCIA: Removable aluminum extrusion valance that attaches to brackets and conceals roller shade.
7. ADDITIONAL AVAILABLE OPTIONS: Reverse Roll.

## **2.3 FABRICATION**

- A. Shade measurements shall be accurate to within  $\pm 1/8$ " or as recommended in writing by manufacturer.

## **2.4 FABRICS**

- A. FABRIC selection from the following: (3% Openness), M Screen 8503.

## **PART 3 – EXECUTION**

### **3.1 INSPECTION:**

- A. SUBCONTRACTOR shall be responsible for inspection on site, approval of mounting surfaces, installation conditions and field measurement for this work.
- B. OTHER INTERACTING TRADES shall receive drawings of shade systems, dimensions, assembly and installation methods from subcontractor upon request.

### **3.2 INSTALLATION:**

- A. INSTALLATION shall comply with manufacturer's specifications, standards and procedures as detailed on contract drawings.
- B. ADEQUATE CLEARANCE shall be provided to permit unencumbered operation of shade and hardware.



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- C. CLEAN finish installation of dirt and finger marks. Leave work area clean and free of debris.

**3.3 DEMONSTRATION:**

- A. Demonstrate operation method and instruct owner's personnel in the proper operation and maintenance of the roller shades.

**END OF SECTION 124920**

SECTION 125000

FURNITURE



## Columbia County Courthouse | Spec Index

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1/24/2024 | Corporate Studio

Name: Columbia County Courthouse  
Street: 640 Ronald Reagan Dr  
City: Evans  
State/Province: GA  
Postal/Zip Code: 30809

**Bid# 2023008-BID3000**  
**Justice Center Addition**  
**FF&E Terms & Conditions**

1. All Unit prices quoted should be State of Georgia contract pricing and remain valid for the entire contract award period.
2. Due to the fact that we are purchasing additional items to match existing furniture in the areas being renovated, **substitution requests will not be accepted.**
3. General Contractor will provide all labor, material, equipment, and supervision to acquire, deliver, set up, and install Furniture, Fixtures, and Equipment as a turnkey solution, as specified in accordance with contract documents. This includes all cords, accessories, and hookups needed for fully functional furniture and equipment.
4. General Contractor and/or designated project manager will coordinate delivery, material lay down, work areas, and installation with FF&E suppliers/vendors. Installation must be completed by Qualified/Certified technicians.
5. General Contractor and/or designated project manager will provide all debris containment, debris storage, and debris removal as well as provide a clean site at the end of each working day as required by Owner's Representative.
6. General Contractor and/or designated project manager will inspect all deliveries for shortages and/or damage and document abnormalities on a punch list with photos and dates as necessary.
7. General Contractor and/or designated project manager will work with appropriate FF&E suppliers/vendors to correct damaged goods prior to Owner acceptance.
8. General Contractor and/or designated project manager will be responsible for keeping corridors and access points free and clear of debris and furniture and provide proper protection for doors, frames, flooring etc. during FF&E installation.
9. General Contractor and/or designated project manager will coordinate with designated Columbia County staff to conduct a final walkthrough, inspection, and acceptance of project.
10. General Contractor is responsible for submitting Operation and maintenance manuals to Owner as part of the project close-out phase.
11. Columbia County (Owner) will not authorize change orders or process requests for payment related to freight, warehousing, storage, delivery, and/or installation of FF&E.

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ISSUED:

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640 Ronald Reagan Dr, Evans, GA, USA, 30809

## ATTORNEY/ CONF. (1) (2007)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>CONFERENCE TABLE BASE</b>							
CTB-01	Brogan 18d x 18w Square Base with Access Panel	Area Total: 2		BG18SBA			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Top: BG48168TT (Large) Companion Top: BG4284TT (Small)							
<b>CONFERENCE TABLE TOP</b>							
CCT-02	Brogan 42w x 84l Rectangular Top	Area Total: 1		BG4284TT			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>TASK CHAIR</b>							
CH-05	Fixed Arm Task Chair	Area Total: 4		Amplify 2723 Y A140 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							


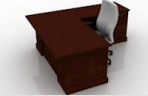


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ISSUED:

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640 Ronald Reagan Dr, Evans, GA, USA, 30809

## ATTORNEY/ CONF. (2) (2004)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK</b>							
DE-01	Brogan 30d x 66w Single Pedestal Desk - Left	Area Total: 1		BG3066LD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Return BG2448ERR							
<b>DESK RETURN</b>							
DR-01	Brogan 24d x 48w Executive Return - Right	Area Total: 1		BG2448ELR			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion - BG3672LD							
<b>GUEST CHAIR</b>							
CH-08	Attorney Guest Chair	Area Total: 1		Portia Arm Chair 8862-04	Undecided	24.50W x 38.00H x 25.00D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
<b>TASK CHAIR</b>							
CH-02	Secretary/Staff Attorney Task Chair	Area Total: 1		Amplify 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							




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## ATTORNEY/ CONF. (2003)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>CONFERENCE TABLE BASE</b>							
CTB-01	Brogan 18d x 18w Square Base with Access Panel	Area Total: 2		BG18SBA			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Top: BG48168TT (Large) Companion Top: BG4284TT (Small)							
<b>CONFERENCE TABLE TOP</b>							
CCT-02	Brogan 42w x 84l Rectangular Top	Area Total: 1		BG4284TT			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>TASK CHAIR</b>							
CH-05	Fixed Arm Task Chair	Area Total: 4		Amplify 2723 Y A140 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							


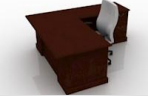


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## ATTORNEY/ CONF. (3) (2006)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK</b>							
DE-02	Brogan 30d x 66w Single Pedestal Desk - Right	Area Total: 1		BG3066RD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Return BG2448ELR							
<b>DESK RETURN</b>							
DR-02	Brogan 24d x 48w Executive Return - Left	Area Total: 1		BG2448ERR			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion - BG3672RD							
<b>GUEST CHAIR</b>							
CH-08	Attorney Guest Chair	Area Total: 1		Portia Arm Chair 8862-04	Undecided	24.50W x 38.00H x 25.00D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
<b>TASK CHAIR</b>							
CH-02	Secretary/Staff Attorney Task Chair	Area Total: 1		Amplify 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							

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## ATTORNEY/ CONF. (4) (2124)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>SLED CHAIR</b>							
CH-12	Plastic Sled for Attorney/Client	Area Total: 2		KELLEY 1060-GT-CF- AP-P05-G16			
MANUFACTURER: 9T05 SEATING, 8889257328, MATTMCBRIDE@WITCONTRACT.COM, MATT MCBRIDE							
<b>TABLE</b>							
TB-03	Attorney/Client Table	Area Total: 1		Quatro Best Value 1D.QUAT-3060	Light Grey		
MANUFACTURER: SPECIAL-T TABLES, 888-705-0777							

## ATTORNEY/ CONF. (5) (2125)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>SLED CHAIR</b>							
CH-12	Plastic Sled for Attorney/Client	Area Total: 2		KELLEY 1060-GT-CF- AP-P05-G16			
MANUFACTURER: 9T05 SEATING, 8889257328, MATTMCBRIDE@WITCONTRACT.COM, MATT MCBRIDE							
<b>TABLE</b>							
TB-03	Attorney/Client Table	Area Total: 1		Quatro Best Value 1D.QUAT-3060	Light Grey		
MANUFACTURER: SPECIAL-T TABLES, 888-705-0777							

## BREAK (1) (1006)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>GUEST CHAIR</b>							
CH-11	Breakroom Table Chair	Area Total: 4		Darien Side Chair 5026-05	Undecided	21.00W x 34.00H x 24.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							



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## BREAK (1155)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>SLED CHAIR</b>							
CH-04	Breakroom Sled Chair	Area Total: 8		Kelley 1060 KELLEY 1060, # 1060-GT-CF- US-P05-F-G16			
MANUFACTURER: 9T05 SEATING, 8889257328, MATTCBRIDE@WITCONTRACT.COM, MATT MCBRIDE							
<b>TABLE</b>							
TB-02	Break Room Table	Area Total: 2		Structure- Cube Conference Table, 42" x 42", Square Shape STRU-CU- 4242-SQ	Metallic Platinum (Matte)		
MANUFACTURER: SPECIAL-T TABLES, 888-705-0777							

## CLERICAL WORKSPACE (1117A)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK RETURN</b>							
DR-05	Return- Single- Pedestal, Right Hand	Area Total: 1		CRRTNSPL		42.0000W x 24.0000D	
MANUFACTURER: STEELCASE, 616.247.2710							
NOTES: Companion Desk: DE-06							
<b>MODULAR LAMINATE DESK</b>							
DE-06	Desk- Single- Pedestal, Left Hand	Area Total: 1		CRDSKSPL		72.0000W x 30.0000D	
MANUFACTURER: STEELCASE, 616.247.2710							
NOTES: Companion Return: DR-05							

## CLERK OF COURT (E-1125)

No Items







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## CONFERENCE ROOM (1162)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>CONFERENCE TABLE BASE</b>							
CTB-01	Brogan 18d x 18w Square Base with Access Panel	Area Total: 3		BG18SBA			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Top: BG48168TT (Large) Companion Top: BG4284TT (Small)							
<b>CONFERENCE TABLE POWER</b>							
CTP-01	Conference Table Power	Area Total: 2		EC13			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>CONFERENCE TABLE TOP</b>							
CCT-01	Brogan 48w x 168l Rectangular Top	Area Total: 1		BG48168TT			
NOTES: Companion Base: BG18SBA							
<b>TASK CHAIR</b>							
CH-05	Fixed Arm Task Chair	Area Total: 16		Amplify 2723 Y A140 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							






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## COURTROOM 1 (E-2037)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>ATTORNEY/CLIENT COURTROOM CHAIR</b>							
ACH-01	Attorney/Client Courtroom Chair	Area Total: 6		Boston 980C	Undecided		
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>DESK</b>							
DE-10	Brogan 36d x 72w Single Pedestal Desk - Right	Area Total: 1		BG3672RD			
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>JURY CHAIR</b>							
JC-01	Jury Chairs	Area Total: 15		Boston Chair 981C	Undecided		
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>LITIGATION TABLE</b>							
LT-01	Brogan 42d x 96w Conference Table with Panel Bases	Area Total: 2		BG4296CTP			
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>TASK CHAIR</b>							
CH-03	Armless Task Chair	Area Total: 3		Amplify 2723 Y A0 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER:		SIT ON IT SEATING, 8882748664					







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## COURTROOM 2 (E-2050)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>ATTORNEY/CLIENT COURTROOM CHAIR</b>							
ACH-01	Attorney/Client Courtroom Chair	Area Total: 12		Boston 980C	Undecided		
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>CLERK TABLE</b>							
CT-01	Brogan 24d x 30w x 30h Printer Stand	Area Total: 1		ZBG2430PS			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: ***MOD55 ***MTB 24X36, OMIT FIXED SHELF							
<b>DESK</b>							
DE-10	Brogan 36d x 72w Single Pedestal Desk - Right	Area Total: 1		BG3672RD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>JURY CHAIR</b>							
JC-01	Jury Chairs	Area Total: 37		Boston Chair 981C	Undecided		
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>LITIGATION TABLE</b>							
LT-01	Brogan 42d x 96w Conference Table with Panel Bases	Area Total: 4		BG4296CTP			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>TASK CHAIR</b>							
CH-03	Armless Task Chair	Area Total: 1		Amplify 2723 Y A0 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							






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## COURTROOM 3 (E-2057)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>ATTORNEY/CLIENT COURTROOM CHAIR</b>							
ACH-01	Attorney/Client Courtroom Chair	Area Total: 6		Boston 980C	Undecided		
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>DESK</b>							
DE-11	Brogan 30d x 66w Single Pedestal Desk - Right	Area Total: 1		BG3066RD			
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>JURY CHAIR</b>							
JC-01	Jury Chairs	Area Total: 15		Boston Chair 981C	Undecided		
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>LITIGATION TABLE</b>							
LT-01	Brogan 42d x 96w Conference Table with Panel Bases	Area Total: 2		BG4296CTP			
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>TASK CHAIR</b>							
CH-03	Armless Task Chair	Area Total: 4		Amplify 2723 Y A0 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER:		SIT ON IT SEATING, 8882748664					



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ISSUED:

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## COURTROOM 4 (E-2080)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>ATTORNEY/CLIENT COURTROOM CHAIR</b>							
ACH-01	Attorney/Client Courtroom Chair	Area Total: 6		Boston 980C	Undecided		
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>DESK</b>							
DE-10	Brogan 36d x 72w Single Pedestal Desk - Right	Area Total: 1		BG3672RD			
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>JURY CHAIR</b>							
JC-01	Jury Chairs	Area Total: 15		Boston Chair 981C	Undecided		
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>LITIGATION TABLE</b>							
LT-01	Brogan 42d x 96w Conference Table with Panel Bases	Area Total: 2		BG4296CTP			
MANUFACTURER:		JSI FURNITURE, 800.457.4511					
<b>TASK CHAIR</b>							
CH-03	Armless Task Chair	Area Total: 3		Amplify 2723 Y A0 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER:		SIT ON IT SEATING, 8882748664					








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## COURTROOM 5 (2138)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>ATTORNEY/CLIENT COURTROOM CHAIR</b>							
ACH-01	Attorney/Client Courtroom Chair	Area Total: 6		Boston 980C	Undecided		
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>DESK</b>							
DE-10	Brogan 36d x 72w Single Pedestal Desk - Right	Area Total: 1		BG3672RD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>JURY CHAIR</b>							
JC-01	Jury Chairs	Area Total: 15		Boston Chair 981C	Undecided		
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>LITIGATION TABLE</b>							
LT-01	Brogan 42d x 96w Conference Table with Panel Bases	Area Total: 2		BG4296CTP			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>PEWS</b>							
PE-01	New Pews for Courtroom Seating	Area Total: 2			Undecided		
NOTES: Small Pews - Approximately 126" L x 20" D - Must be verified in field & with Corporate Studio							
PE-02	New Pews for Courtroom Seating	Area Total: 2			Undecided		
NOTES: Medium Pews - Approximately 144" L x 20" D - Must be verified in field & with Corporate Studio							
PE-03	New Pews for Courtroom Seating	Area Total: 4			Undecided		
NOTES: Large Pews - Approximately 168" L x 20" D - Must be verified in field & with Corporate Studio							


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## COURTROOM 5 (2138)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>TASK CHAIR</b>							
CH-03	Armless Task Chair	Area Total: 3		Amplify 2723 Y A0 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER:		SIT ON IT SEATING, 8882748664					

## FRONT DESK (1082)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK RETURN</b>							
DR-03	Return- Single-Pedestal, Right Hand	Area Total: 4		CRRTNSPR		42.0000W x 24.0000D	
MANUFACTURER:		STEELCASE, 616.247.2710					
NOTES:		Companion Desk: DE-09					
DR-04	Return- Single-Pedestal, Left Hand	Area Total: 3		CRRTNSPL		42.0000W x 24.0000D	
MANUFACTURER:		STEELCASE, 616.247.2710					
NOTES:		Companion Desk: DE-05					
<b>MODULAR LAMINATE DESK</b>							
DE-05	Desk- Single-Pedestal, Right Hand	Area Total: 3		CRDSKSPR		72.0000W x 30.0000D	
MANUFACTURER:		STEELCASE, 616.247.2710					
NOTES:		Companion Return: DR-04					
DE-09	Desk- Single-Pedestal, Left Hand	Area Total: 4		CRDSKSPL		72.0000W x 30.0000D	
MANUFACTURER:		STEELCASE, 616.247.2710					
NOTES:		Companion Return: DR-03					
<b>TASK CHAIR</b>							
CH-10	Adjustable Arm Task Chair	Area Total: 7		Amplify 2723 Y A142 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER:		SIT ON IT SEATING, 8882748664					







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ISSUED:

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## JUDGE OFFICE 1 (1166)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>BOOKCASE</b>							
BC-01	Modular Open Bookcase	Area Total: 2		BG1542MBC		34 1/2W x 40 13/16H x 15D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1572MCT (1); BG2472LFC							
<b>BOOKCASE LATERAL FILE CREDENZA</b>							
BCC-01	Bookcase Lateral File Credenza	Area Total: 1		BG2472LFC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG1572MCT (1)							
<b>BOOKCASE TOP</b>							
BKT-01	Bookcase Top	Area Total: 1		BG1572MCT		70 1/2W x 15 7/8H x 1 3/16D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG2472LFC (1)							
<b>DESK</b>							
DE-03	Executive Office Desk	Area Total: 1		BG3672ED			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>GUEST CHAIR</b>							
CH-06	Judge's Office Guest Chair	Area Total: 2		Pierce Occasional Chair 8337-01	Undecided	26.00W x 34.00H x 26.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
NOTES: Chair to be two-toned with one fabric on back and one on seat; fabric selections to follow;							
<b>KNEESPACE CREDENZA</b>							
KC-01	Brogan 24d x 72w Kneespace Credenza	Area Total: 1		BG2472KC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							









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## JUDGE OFFICE 2 (1175)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>BOOKCASE</b>							
BC-01	Modular Open Bookcase	Area Total: 2		BG1542MBC		34 1/2W x 40 13/16H x 15D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1572MCT (1); BG2472LFC							
<b>BOOKCASE LATERAL FILE CREDENZA</b>							
BCC-01	Bookcase Lateral File Credenza	Area Total: 1		BG2472LFC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG1572MCT (1)							
<b>BOOKCASE TOP</b>							
BKT-01	Bookcase Top	Area Total: 1		BG1572MCT		70 1/2W x 15 7/8H x 1 3/16D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG2472LFC (1)							
<b>DESK</b>							
DE-03	Executive Office Desk	Area Total: 1		BG3672ED			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>GUEST CHAIR</b>							
CH-06	Judge's Office Guest Chair	Area Total: 2		Pierce Occasional Chair 8337-01	Undecided	26.00W x 34.00H x 26.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
NOTES: Chair to be two-toned with one fabric on back and one on seat; fabric selections to follow;							
<b>KNEESPACE CREDENZA</b>							
KC-01	Brogan 24d x 72w Kneespace Credenza	Area Total: 1		BG2472KC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							







# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## JUDGE OFFICE 3 (1181)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>BOOKCASE</b>							
BC-01	Modular Open Bookcase	Area Total: 2		BG1542MBC		34 1/2W x 40 13/16H x 15D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1572MCT (1); BG2472LFC							
<b>BOOKCASE LATERAL FILE CREDENZA</b>							
BCC-01	Bookcase Lateral File Credenza	Area Total: 1		BG2472LFC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG1572MCT (1)							
<b>BOOKCASE TOP</b>							
BKT-01	Bookcase Top	Area Total: 1		BG1572MCT		70 1/2W x 15 7/8H x 1 3/16D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG2472LFC (1)							
<b>DESK</b>							
DE-03	Executive Office Desk	Area Total: 1		BG3672ED			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>GUEST CHAIR</b>							
CH-06	Judge's Office Guest Chair	Area Total: 2		Pierce Occasional Chair 8337-01	Undecided	26.00W x 34.00H x 26.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
NOTES: Chair to be two-toned with one fabric on back and one on seat; fabric selections to follow;							
<b>KNEESPACE CREDENZA</b>							
KC-01	Brogan 24d x 72w Kneespace Credenza	Area Total: 1		BG2472KC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							




# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:


1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## JURY (2136)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>CONFERENCE TABLE BASE</b>							
CTB-01	Brogan 18d x 18w Square Base with Access Panel	Area Total: 3		BG18SBA			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Top: BG48168TT (Large) Companion Top: BG4284TT (Small)							
<b>CONFERENCE TABLE TOP</b>							
CCT-03	Brogan 48w x 144l Rectangular Top	Area Total: 1		BG48144TT			
NOTES: Companion Base: BG18SBA							
<b>TASK CHAIR</b>							
CH-05	Fixed Arm Task Chair	Area Total: 14		Amplify 2723 Y A140 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							

## JURY ASSEMBLY (2103)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>JURY ASSEMBLY CHAIR</b>							
ACH-02	Jury Assembly Chair	Area Total: 202		5214 AC3 UP FG3 G5 B AC			
MANUFACTURER: SIT ON IT SEATING, 8882748664							

## MAGISTRATE JUDGE (E-1124)

No Items



# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:



1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## MEDIATION/CONF. (2005)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>CONFERENCE TABLE BASE</b>							
CTB-01	Brogan 18d x 18w Square Base with Access Panel	Area Total: 3		BG18SBA			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Top: BG48168TT (Large) Companion Top: BG4284TT (Small)							
<b>TASK CHAIR</b>							
CH-05	Fixed Arm Task Chair	Area Total: 12		Amplify 2723 Y A140 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							

## OFFICE (1) (2091)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK</b>							
DE-03	Executive Office Desk	Area Total: 1		BG3672ED			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>KNEESPACE CREDENZA</b>							
KC-01	Brogan 24d x 72w Kneespace Credenza	Area Total: 1		BG2472KC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							



# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

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640 Ronald Reagan Dr, Evans, GA, USA, 30809

## OFFICE (2091)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>GUEST CHAIR</b>							
CH-09	Captain Guest Chair	Area Total: 2		Darien Side Chair 5026-05	Undecided	21.00W x 34.00H x 24.50D	
MANUFACTURER:		FAIRFIELD CHAIR, 828.758.5571					
<b>TASK CHAIR</b>							
CH-10	Adjustable Arm Task Chair	Area Total: 1		Amplify 2723 Y A142 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER:		SIT ON IT SEATING, 8882748664					







# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## OPEN OFFICE (1) (1004)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK RETURN</b>							
DR-06	Return- Single-Pedestal, Left Hand	Area Total: 1		CRRTNSPL		42.0000W x 24.0000D	
MANUFACTURER: STEELCASE, 616.247.2710							
NOTES: Companion Return: DE-07							
DR-07	Return- Single-Pedestal, Right Hand	Area Total: 2		CRRTNSPR		42.0000W x 24.0000D	
MANUFACTURER: STEELCASE, 616.247.2710							
NOTES: Companion Desk: DE-08							
<b>LATERAL FILE</b>							
LF-01	Lateral 2 High File/File	Area Total: 3		CRL2H		30.0000W x 24.0000D	
MANUFACTURER: STEELCASE, 616.247.2710							
<b>MODULAR LAMINATE DESK</b>							
DE-07	Desk- Single-Pedestal, Right Hand	Area Total: 1		CRDSKSPR		72.0000W x 30.0000D	
MANUFACTURER: STEELCASE, 616.247.2710							
NOTES: Companion Return: DR-06							
DE-08	Desk- Single-Pedestal, Left Hand	Area Total: 2		CRDSKSPL		72.0000W x 30.0000D	
MANUFACTURER: STEELCASE, 616.247.2710							
NOTES: Companion Return: DR-07							
<b>OVERHEAD STORAGE HUTCH</b>							
DOH-01	Overhead- Stacking, Hinged Doors	Area Total: 3		CROHSHD		72.0000W x 38.00748H	
MANUFACTURER: STEELCASE, 616.247.2710							
NOTES: Companion Specs: DE-07, DE-08							





# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:


1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## OPEN OFFICE (E-2092)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>MODULAR LAMINATE DESK</b>							
DE-12	Desk- Single-Pedestal, Right Hand	Area Total: 3		CRDSKSPR		72.0000W x 30.0000D	
MANUFACTURER: STEELCASE, 616.247.2710							
NOTES: NO RETURN							
<b>SLED CHAIR</b>							
CH-04	Breakroom Sled Chair	Area Total: 4		Kelley 1060 KELLEY 1060, # 1060-GT-CF- US-P05-F-G16			
MANUFACTURER: 9T05 SEATING, 8889257328, MATTMCBRIDE@WITCONTRACT.COM, MATT MCBRIDE							
<b>TABLE</b>							
TB-02	Break Room Table	Area Total: 1		Structure-Cube Conference Table, 42" x 42", Square Shape STRU-CU- 4242-SQ	Metallic Platinum (Matte)		
MANUFACTURER: SPECIAL-T TABLES, 888-705-0777							
<b>TASK CHAIR</b>							
CH-03	Armless Task Chair	Area Total: 3		Amplify 2723 Y A0 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							

## PROBATE COURT JUDGE (1034)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>GUEST CHAIR</b>							
CH-06	Judge's Office Guest Chair	Area Total: 2		Pierce Occasional Chair 8337-01	Undecided	26.00W x 34.00H x 26.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
NOTES: Chair to be two-toned with one fabric on back and one on seat; fabric selections to follow;							




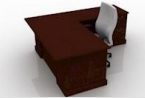


# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## SECRETARY (1) (1174)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>BOOKCASE</b>							
BC-01	Modular Open Bookcase	Area Total: 2		BG1542MBC		34 1/2W x 40 13/16H x 15D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1572MCT (1); BG2472LFC							
<b>BOOKCASE LATERAL FILE CREDENZA</b>							
BCC-01	Bookcase Lateral File Credenza	Area Total: 1		BG2472LFC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG1572MCT (1)							
<b>BOOKCASE TOP</b>							
BKT-01	Bookcase Top	Area Total: 1		BG1572MCT		70 1/2W x 15 7/8H x 1 3/16D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG2472LFC (1)							
<b>DESK</b>							
DE-01	Brogan 30d x 66w Single Pedestal Desk - Left	Area Total: 1		BG3066LD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Return BG2448ERR							
<b>DESK RETURN</b>							
DR-01	Brogan 24d x 48w Executive Return - Right	Area Total: 1		BG2448ELR			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion - BG3672LD							
<b>GUEST CHAIR</b>							
CH-07	Secretary Guest Chair	Area Total: 2		Kirkland Occasional Chair 8060-01	Undecided	28.00W x 38.50H x 31.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							





# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## SECRETARY (1) (1174)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>TABLE</b>							
TB-01	JSI Brogan 20x28 End Table	Area Total: 1		BG2028ET	Undecided		
<b>TASK CHAIR</b>							
CH-02	Secretary/Staff Attorney Task Chair	Area Total: 1		Amplify 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD			
MANUFACTURER:		SIT ON IT SEATING, 8882748664					




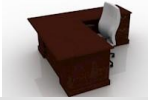


# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## SECRETARY (1180)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>BOOKCASE</b>							
BC-01	Modular Open Bookcase	Area Total: 2		BG1542MBC		34 1/2W x 40 13/16H x 15D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1572MCT (1); BG2472LFC							
<b>BOOKCASE LATERAL FILE CREDENZA</b>							
BCC-01	Bookcase Lateral File Credenza	Area Total: 1		BG2472LFC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG1572MCT (1)							
<b>BOOKCASE TOP</b>							
BKT-01	Bookcase Top	Area Total: 1		BG1572MCT		70 1/2W x 15 7/8H x 1 3/16D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG2472LFC (1)							
<b>DESK</b>							
DE-01	Brogan 30d x 66w Single Pedestal Desk - Left	Area Total: 1		BG3066LD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Return BG2448ERR							
<b>DESK RETURN</b>							
DR-01	Brogan 24d x 48w Executive Return - Right	Area Total: 1		BG2448ELR			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion - BG3672LD							
<b>GUEST CHAIR</b>							
CH-07	Secretary Guest Chair	Area Total: 2		Kirkland Occasional Chair 8060-01	Undecided	28.00W x 38.50H x 31.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							



# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## SECRETARY (1180)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>TABLE</b>							
TB-01	JSI Brogan 20x28 End Table	Area Total: 1		BG2028ET	Undecided		
<b>TASK CHAIR</b>							
CH-02	Secretary/Staff Attorney Task Chair	Area Total: 1		Amplify 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD			
MANUFACTURER:		SIT ON IT SEATING, 8882748664					




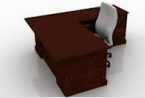


# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## SECRETARY (2) (1171)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>BOOKCASE</b>							
BC-01	Modular Open Bookcase	Area Total: 2		BG1542MBC		34 1/2W x 40 13/16H x 15D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1572MCT (1); BG2472LFC							
<b>BOOKCASE LATERAL FILE CREDENZA</b>							
BCC-01	Bookcase Lateral File Credenza	Area Total: 1		BG2472LFC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG1572MCT (1)							
<b>BOOKCASE TOP</b>							
BKT-01	Bookcase Top	Area Total: 1		BG1572MCT		70 1/2W x 15 7/8H x 1 3/16D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG2472LFC (1)							
<b>DESK</b>							
DE-02	Brogan 30d x 66w Single Pedestal Desk - Right	Area Total: 1		BG3066RD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Return BG2448ELR							
<b>DESK RETURN</b>							
DR-02	Brogan 24d x 48w Executive Return - Left	Area Total: 1		BG2448ERR			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion - BG3672RD							
<b>GUEST CHAIR</b>							
CH-07	Secretary Guest Chair	Area Total: 2		Kirkland Occasional Chair 8060-01	Undecided	28.00W x 38.50H x 31.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							



# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:





1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## SECRETARY (2) (1171)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>TABLE</b>							
TB-01	JSI Brogan 20x28 End Table	Area Total: 1		BG2028ET	Undecided		
<b>TASK CHAIR</b>							
CH-02	Secretary/Staff Attorney Task Chair	Area Total: 1		Amplify 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							

## STAFF ATTORNEY (1) (1176)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK</b>							
DE-02	Brogan 30d x 66w Single Pedestal Desk - Right	Area Total: 1		BG3066RD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Return BG2448ELR							
<b>DESK RETURN</b>							
DR-02	Brogan 24d x 48w Executive Return - Left	Area Total: 1		BG2448ERR			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion - BG3672RD							
<b>GUEST CHAIR</b>							
CH-08	Attorney Guest Chair	Area Total: 1		Portia Arm Chair 8862-04	Undecided	24.50W x 38.00H x 25.00D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
<b>TASK CHAIR</b>							
CH-02	Secretary/Staff Attorney Task Chair	Area Total: 1		Amplify 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							


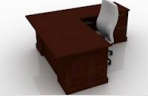


# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

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## STAFF ATTORNEY (1182)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK</b>							
DE-02	Brogan 30d x 66w Single Pedestal Desk - Right	Area Total: 1		BG3066RD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Return BG2448ELR							
<b>DESK RETURN</b>							
DR-02	Brogan 24d x 48w Executive Return - Left	Area Total: 1		BG2448ERR			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion - BG3672RD							
<b>GUEST CHAIR</b>							
CH-08	Attorney Guest Chair	Area Total: 1		Portia Arm Chair 8862-04	Undecided	24.50W x 38.00H x 25.00D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
<b>TASK CHAIR</b>							
CH-02	Secretary/Staff Attorney Task Chair	Area Total: 1		Amplify 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							


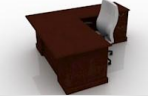


# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024







640 Ronald Reagan Dr, Evans, GA, USA, 30809

## STAFF ATTORNEY (2) (1167)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>DESK</b>							
DE-02	Brogan 30d x 66w Single Pedestal Desk - Right	Area Total: 1		BG3066RD			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Return BG2448ELR							
<b>DESK RETURN</b>							
DR-02	Brogan 24d x 48w Executive Return - Left	Area Total: 1		BG2448ERR			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion - BG3672RD							
<b>GUEST CHAIR</b>							
CH-08	Attorney Guest Chair	Area Total: 1		Portia Arm Chair 8862-04	Undecided	24.50W x 38.00H x 25.00D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
<b>TASK CHAIR</b>							
CH-02	Secretary/Staff Attorney Task Chair	Area Total: 1		Amplify 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							

640 Ronald Reagan Dr, Evans, GA, USA, 30809

VISITING JUDGE (1163)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>BOOKCASE</b>							
BC-01	Modular Open Bookcase	Area Total: 2		BG1542MBC		34 1/2W x 40 13/16H x 15D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1572MCT (1); BG2472LFC							
<b>BOOKCASE LATERAL FILE CREDENZA</b>							
BCC-01	Bookcase Lateral File Credenza	Area Total: 1		BG2472LFC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG1572MCT (1)							
<b>BOOKCASE TOP</b>							
BKT-01	Bookcase Top	Area Total: 1		BG1572MCT		70 1/2W x 15 7/8H x 1 3/16D	
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Specs: BG1542MBC (2); BG2472LFC (1)							
<b>DESK</b>							
DE-03	Executive Office Desk	Area Total: 1		BG3672ED			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>GUEST CHAIR</b>							
CH-06	Judge's Office Guest Chair	Area Total: 2		Pierce Occasional Chair 8337-01	Undecided	26.00W x 34.00H x 26.50D	
MANUFACTURER: FAIRFIELD CHAIR, 828.758.5571							
NOTES: Chair to be two-toned with one fabric on back and one on seat; fabric selections to follow;							
<b>KNEESPACE CREDENZA</b>							
KC-01	Brogan 24d x 72w Kneespace Credenza	Area Total: 1		BG2472KC			
MANUFACTURER: JSI FURNITURE, 800.457.4511							






# Columbia County Courthouse #2024-B1115 - Spec Index

ISSUED:

1/24/2024

640 Ronald Reagan Dr, Evans, GA, USA, 30809

## WITNESS (2140)

CODE	DESCRIPTION	QUANTITY	LOCATION	COLOR, MODEL	FINISH	DIMS	IMAGE
<b>CONFERENCE TABLE BASE</b>							
CTB-01	Brogan 18d x 18w Square Base with Access Panel	Area Total: 2		BG18SBA			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
NOTES: Companion Top: BG48168TT (Large) Companion Top: BG4284TT (Small)							
<b>CONFERENCE TABLE TOP</b>							
CCT-02	Brogan 42w x 84l Rectangular Top	Area Total: 1		BG4284TT			
MANUFACTURER: JSI FURNITURE, 800.457.4511							
<b>TASK CHAIR</b>							
CH-05	Fixed Arm Task Chair	Area Total: 4		Amplify 2723 Y A140 VG6 C16 B17 B3 FC1 KD			
MANUFACTURER: SIT ON IT SEATING, 8882748664							

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## Columbia County Courthouse | Full Page Spec

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1/24/2024 | Corporate Studio

Name: Columbia County Courthouse  
Street: 640 Ronald Reagan Dr  
City: Evans  
State/Province: GA  
Postal/Zip Code: 30809

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# ACH-01

## ATTORNEY/CLIENT COURTROOM CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 36 ea  
MODEL NUMBER: 980C  
MODEL NAME: Boston  
WOOD SPECIES: Undecided  
FINISH: Undecided  
FABRIC VENDOR: Ultrafabrics  
FABRIC PATTERN: Ultraleather  
FABRIC COLOR: Diplomat Blue  
CASTERS: Yes  
TRIM NAILS: No  
GLIDE TYPE: No

2138 - Courtroom 5	6 ea
E-2037 - Courtroom 1	6 ea
E-2050 - Courtroom 2	12 ea
E-2057 - Courtroom 3	6 ea
E-2080 - Courtroom 4	6 ea

Arch  FFE



COM Fabric  
Ultrafabrics  
Cambridge Blue

MANUFACTURER  
JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

MANUFACTURER CONTACT  
800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# ACH-02

## JURY ASSEMBLY CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 202 ea  
MODEL NUMBER: 5214 AC3 UP FG3 G5 B AC  
STYLE: Upholstered Seat and Back  
FRAME TYPE: Four Leg with Glides  
BALLISTIC NYLON: No Ballistic Nylon  
FRAME FINISH: Black  
HEAVY DUTY: No Heavy Duty  
FABRIC VENDOR: Graded-In: Momentum Grade 3  
FABRIC PATTERN: Odyssey C-Zero  
FABRIC COLOR: Maritime  
ARM STYLE: Black Fixed Loop Arms  
SEAT CUSHION STYLE: Standard Foam  
GLIDE TYPE: Standard Multi-Surface Glides



2103 - Jury Assembly

202 ea

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Graded in - Grade 3  
Momentum Odyssey  
C-Zero

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6415 KATELLA AVE  
CYPRESS, CALIFORNIA  
USA, 90630

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8882748664  
[HTTPS://WWW.SITONIT.NET](https://www.sitonit.net)

# BC-01

## MODULAR OPEN BOOKCASE

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 14 ea  
MODEL NUMBER: BG1542MBC  
VENEER: Unspecified  
TRIM MOLDING: Angled Trim Molding  
WIDTH: 34 1/2  
HEIGHT: 40 13/16  
DEPTH: 15

1163 - Visiting Judge	2 ea
1166 - Judge Office 1	2 ea
1171 - Secretary (2)	2 ea
1174 - Secretary (1)	2 ea
1175 - Judge Office 2	2 ea
1180 - Secretary	2 ea
1181 - Judge Office 3	2 ea

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### NOTES

COMPANION SPECS: BG1572MCT (1); BG2472LFC

### MANUFACTURER

JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

### MANUFACTURER CONTACT

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[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)



# BCC-01

## BOOKCASE LATERAL FILE CREDENZA

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 7 ea  
 MODEL NUMBER: BG2472LFC  
 VENEER: Unspecified  
 RIGHT SIDE STORAGE: Lateral File  
 LEFT SIDE STORAGE: Lateral File  
 ADDITIONAL GROMMETS: 1 Additional Grommet  
 TRIM MOLDING: Angled Trim Molding  
 PULL STYLE: Unspecified  
 PULL COLOR: Unspecified  
 ERGO ADJUSTABLE WORKSURFACE: No Option Selected



- 1163 - Visiting Judge 1 ea
- 1166 - Judge Office 1 1 ea
- 1171 - Secretary (2) 1 ea
- 1174 - Secretary (1) 1 ea
- 1175 - Judge Office 2 1 ea
- 1180 - Secretary 1 ea
- 1181 - Judge Office 3 1 ea

### NOTES

COMPANION SPECS: BG1542MBC (2); BG1572MCT (1)

### MANUFACTURER

JSI FURNITURE  
 225 CLAY STREET  
 JASPER, INDIANA  
 USA, 47546

### MANUFACTURER CONTACT

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# BKT-01

## BOOKCASE TOP

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 7 ea  
MODEL NUMBER: BG1572MCT  
VENEER: Unspecified  
WIDTH: 70 1/2  
HEIGHT: 15 7/8  
DEPTH: 13 1/16

1163 - Visiting Judge	1 ea
1166 - Judge Office 1	1 ea
1171 - Secretary (2)	1 ea
1174 - Secretary (1)	1 ea
1175 - Judge Office 2	1 ea
1180 - Secretary	1 ea
1181 - Judge Office 3	1 ea

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### NOTES

COMPANION SPECS: BG1542MBC (2); BG2472LFC (1)

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225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

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# CCT-01

## BROGAN 48W X 168L RECTANGULAR TOP

QUANTITY: 1 ea  
MODEL NUMBER: BG48168TT  
SIZE: 48" x 168"  
VENEER: Undecided

1162 - Conference Room

Arch  FFE

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

1 ea



NOTES

COMPANION BASE: BG18SBA

# CCT-02

## BROGAN 42W X 84L RECTANGULAR TOP

QUANTITY: 3 ea  
MODEL NUMBER: BG4284TT  
SIZE: 42x84  
VENEER: Undecided

2003 - Attorney/ Conf.

2007 - Attorney/ Conf. (1)

2140 - Witness

Arch  FFE

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

1 ea

1 ea

1 ea



### MANUFACTURER

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USA, 47546

### MANUFACTURER CONTACT

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# CCT-03

## BROGAN 48W X 144L RECTANGULAR TOP

QUANTITY: 1 ea  
MODEL NUMBER: BG48144TT  
SIZE: 48" x 144"  
VENEER: Undecided

2136 - Jury

Arch  FFE

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

1 ea



### NOTES

COMPANION BASE: BG18SBA

# CH-02

## SECRETARY/STAFF ATTORNEY TASK CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 8 ea  
 MODEL NUMBER: 2723 Y/e3 A142 COM C16 B17 B3 FC1 KD  
 MODEL NAME: Amplify  
 BACK CUSHION: High Back Upholstered  
 STYLE:  
 SIZE: Highback With Adjustable Lumbar - 2723  
 FRAME FINISH: Black  
 FABRIC VENDOR: COM Ultrafabrics  
 FABRIC PATTERN: Ultraleather Pro  
 FABRIC COLOR: Hazelwood  
 ARM STYLE: Multi-Adjustable  
 MECHANISM: Enhanced Synchro with Seat Depth Adjustment  
 BASE CYLINDER: Black Nylon  
 CYLINDER HEIGHT: Standard Cylinder  
 CASTERS: Carpet Casters



chairbuilder.sitonit.net

1167 - Staff Attorney (2)	1 ea
1171 - Secretary (2)	1 ea
1174 - Secretary (1)	1 ea
1176 - Staff Attorney (1)	1 ea
1180 - Secretary	1 ea
1182 - Staff Attorney	1 ea
2004 - Attorney/ Conf. (2)	1 ea
2006 - Attorney/ Conf. (3)	1 ea



COM Fabric  
Ultraleather Pro  
Hazelwood

Arch  FFE

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REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE  FINISH SAMPLE  PROTOTYPE

# CH-03

## ARMLESS TASK CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 17 ea  
 MODEL NUMBER: 2723 Y A0 VG6 C16 B17 B3 FC1 KD  
 MODEL NAME: Amplify  
 BACK CUSHION: Upholstered  
 STYLE:  
 SIZE: Highback with Adjustable Lumbar  
 FRAME FINISH: Black  
 FABRIC VENDOR: Graded-In Ultrafabrics Grade 6  
 FABRIC PATTERN: Brisa Original  
 FABRIC COLOR: Cambridge Blue  
 ARM STYLE: Armless  
 MECHANISM: Enhanced Synchro  
 BASE CYLINDER: Black Nylon  
 CYLINDER HEIGHT: Standard Cylinder  
 CASTERS: Carpet Casters



2138 - Courtroom 5	3 ea
E-2037 - Courtroom 1	3 ea
E-2050 - Courtroom 2	1 ea
E-2057 - Courtroom 3	4 ea
E-2080 - Courtroom 4	3 ea
E-2092 - Open Office	3 ea



Graded-In Grade 6  
 Ultrafabrics Brisa  
 Original Cambridge  
 Blue

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REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE     FINISH SAMPLE     PROTOTYPE

# CH-04

## BREAKROOM SLED CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 12 ea  
MODEL NAME: Kelley 1060  
MODEL NUMBER: KELLEY 1060, # 1060-GT-CF-US-P05-F-G16  
FRAME TYPE: Sled  
FRAME FINISH: Silver  
FABRIC VENDOR: Graded0In Ultrafabrics  
FABRIC PATTERN: Brisa Original  
FABRIC COLOR: Cambridge Blue  
PLASTIC COLOR: White Whisper  
GLIDE TYPE: Clear Non-Marring Floor Glides

1155 - Break 8 ea

E-2092 - Open Office 4 ea

Arch FFE



Graded-In  
Ultrafabrics Brisa  
Original Cambridge  
Blue

MANUFACTURER  
9T05 SEATING  
3211 JAKE NORTHROP AVE  
HAWTHORNE, CA  
USA, 90250

MANUFACTURER CONTACT  
MATT MCBRIDE  
8889257328  
MATTMCBRIDE@WITCONTRACT.COM  
WWW.9T05SEATING.COM



# CH-05

## FIXED ARM TASK CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 54 ea  
 MODEL NUMBER: 2723 Y A140 VG6 C16 B17 B3 FC1 KD  
 MODEL NAME: Amplify  
 BACK CUSHION: Upholstered  
 STYLE:  
 SIZE: Highback with Adjustable Lumbar  
 FRAME FINISH: Black  
 FABRIC VENDOR: Graded-In Ultrafabrics Grade 6  
 FABRIC PATTERN: Brisa Original  
 FABRIC COLOR: Cambridge Blue  
 ARM STYLE: Fixed Polyurethane  
 MECHANISM: Enhanced Synchro  
 BASE CYLINDER: Black Nylon  
 CYLINDER HEIGHT: Standard Cylinder  
 CASTERS: Carpet Casters



1162 - Conference Room	16 ea
2003 - Attorney/ Conf.	4 ea
2005 - Mediation/Conf.	12 ea
2007 - Attorney/ Conf. (1)	4 ea
2136 - Jury	14 ea
2140 - Witness	4 ea



Graded-In  
Ultrafabrics Brisa  
Original Cambridge  
Blue

Arch    FFE  
   

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REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE     FINISH SAMPLE     PROTOTYPE

# CH-06

## JUDGE'S OFFICE GUEST CHAIR

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 10 ea  
 MODEL NUMBER: 8337-01  
 MODEL NAME: Pierce Occasional Chair  
 FINISH: Undecided  
 FABRIC VENDOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 FABRIC PATTERN: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 FABRIC COLOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 WIDTH: 26.00  
 DEPTH: 26.50  
 HEIGHT: 34.00  
 ARM HEIGHT: 24.00



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- 1034 - Probate Court Judge 2 ea
- 1163 - Visiting Judge 2 ea
- 1166 - Judge Office 1 2 ea
- 1175 - Judge Office 2 2 ea
- 1181 - Judge Office 3 2 ea

### NOTES

CHAIR TO BE TWO-TONED WITH ONE FABRIC ON BACK AND ONE ON SEAT; FABRIC SELECTIONS TO FOLLOW;

Arch    FFE  
   

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### REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE     FINISH SAMPLE

# CH-07

## SECRETARY GUEST CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 6 ea  
 MODEL NUMBER: 8060-01  
 MODEL NAME: Kirkland Occasional Chair  
 FINISH: Undecided  
 FABRIC VENDOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 FABRIC PATTERN: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 FABRIC COLOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 WIDTH: 28.00  
 DEPTH: 31.50  
 HEIGHT: 38.50  
 ARM HEIGHT: 25.50

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1171 - Secretary (2) 2 ea

1174 - Secretary (1) 2 ea

1180 - Secretary 2 ea

Arch    FFE  
   



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REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE     FINISH SAMPLE

# CH-08

## ATTORNEY GUEST CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 5 ea  
 MODEL NUMBER: 8862-04  
 MODEL NAME: Portia Arm Chair  
 FINISH: Undecided  
 FABRIC VENDOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 FABRIC PATTERN: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 FABRIC COLOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
 WIDTH: 24.50  
 DEPTH: 25.00  
 HEIGHT: 38.00  
 ARM HEIGHT: 26.00



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1167 - Staff Attorney (2) 1 ea  
 1176 - Staff Attorney (1) 1 ea  
 1182 - Staff Attorney 1 ea  
 2004 - Attorney/ Conf. (2) 1 ea  
 2006 - Attorney/ Conf. (3) 1 ea

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REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE  FINISH SAMPLE

# CH-09

## CAPTAIN GUEST CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 2 ea  
MODEL NUMBER: 5026-05  
MODEL NAME: Darien Side Chair  
FINISH: Undecided  
FABRIC VENDOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
FABRIC PATTERN: COM DEALER NET \$70 (SPEC TO FOLLOW)  
FABRIC COLOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
WIDTH: 21.00  
DEPTH: 24.50  
HEIGHT: 34.00  
ARM HEIGHT: No Arms

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2091 - Office

2 ea



Arch  FFE

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REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE  FINISH SAMPLE

# CH-10

## ADJUSTABLE ARM TASK CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 8 ea  
MODEL NUMBER: 2723 Y A142 VG6 C16 B17 B3 FC1 KD  
MODEL NAME: Amplify  
BACK CUSHION Upholstered  
STYLE:  
SIZE: Highback with Adjustable Lumbar  
FRAME FINISH: Black  
FABRIC VENDOR: Graded-In Ultrafabrics Grade 6  
FABRIC PATTERN: Brisa Original  
FABRIC COLOR: Cambridge Blue  
ARM STYLE: Fixed Polyurethane  
MECHANISM: Enhanced Synchro  
BASE CYLINDER: Black Nylon  
CYLINDER HEIGHT: Standard Cylinder  
CASTERS: Carpet Casters

1082 - Front Desk 7 ea

2091 - Office 1 ea

Arch FFE



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REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE  FINISH SAMPLE  PROTOTYPE

# CH-11 BREAKROOM TABLE CHAIR

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 4 ea  
MODEL NUMBER: 5026-05  
MODEL NAME: Darien Side Chair  
FINISH: Undecided  
FABRIC VENDOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
FABRIC PATTERN: COM DEALER NET \$70 (SPEC TO FOLLOW)  
FABRIC COLOR: COM DEALER NET \$70 (SPEC TO FOLLOW)  
WIDTH: 21.00  
DEPTH: 24.50  
HEIGHT: 34.00  
ARM HEIGHT: No Arms

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1006 - Break (1)

4 ea

Arch  FFE



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FAIRFIELD CHAIR  
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USA, 28645

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REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

FABRIC SAMPLE  FINISH SAMPLE

# CH-12

## PLASTIC SLED FOR ATTORNEY/CLIENT

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 4 ea  
MODEL NAME: KELLEY  
MODEL NUMBER: 1060-GT-CF-AP-P05-G16  
FRAME TYPE: All Plastic  
FRAME FINISH: Chrome  
FABRIC VENDOR: NONE  
FABRIC PATTERN: NONE  
FABRIC COLOR: NONE  
PLASTIC COLOR: 05 White Whisper  
GLIDE TYPE: (G16) Clear Non-Marring Floor Glides

2124 - Attorney/ Conf. (4) 2 ea

2125 - Attorney/ Conf. (5) 2 ea

Arch FFE



### MANUFACTURER

9T05 SEATING  
3211 JAKE NORTHROP AVE  
HAWTHORNE, CA  
USA, 90250

### MANUFACTURER CONTACT

MATT MCBRIDE  
8889257328  
MATTCBRIDE@WITCONTRACT.COM  
WWW.9T05SEATING.COM



# CT-01

## BROGAN 24D X 30W X 30H PRINTER STAND

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 1 ea  
MODEL NUMBER: ZBG2430PS  
VENEER: Undecided Veneer Selection  
ADDITIONAL GROMMETS: No Additional Grommets Selected  
TRIM MOLDING: Standard Angled Trim Molding  
DESCRIPTION: \*\*\*MOD55 \*\*\*MTB 24X36, OMIT FIXED SHELF

E-2050 - Courtroom 2

1 ea

Arch  FFE



### NOTES

\*\*\*MOD55 \*\*\*MTB 24X36, OMIT FIXED SHELF

#### MANUFACTURER

JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

#### MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# CTB-01

## BROGAN 18D X 18W SQUARE BASE WITH ACCESS PANEL

QUANTITY: 15 ea  
MODEL NUMBER: BG18SBA  
VENEER: Undecided  
SIZE: 18" x 18"  
TRIM MOLDING: Angled Trim Molding

1162 - Conference Room

2003 - Attorney/ Conf.

2005 - Mediation/Conf.

2007 - Attorney/ Conf. (1)

2136 - Jury

2140 - Witness

Arch  FFE

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

3 ea

2 ea

3 ea

2 ea

3 ea

2 ea



### NOTES

COMPANION TOP: BG48168TT (LARGE)  
COMPANION TOP: BG4284TT (SMALL)

### MANUFACTURER

JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

### MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# CTP-01

## CONFERENCE TABLE

### POWER

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 2 ea  
MODEL NUMBER: EC13  
DESCRIPTION: 8"d x 8-3/8"w Dual power and Data Tilt Up

1162 - Conference Room

2 ea

Arch  FFE



#### MANUFACTURER

JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

#### MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# DE-01

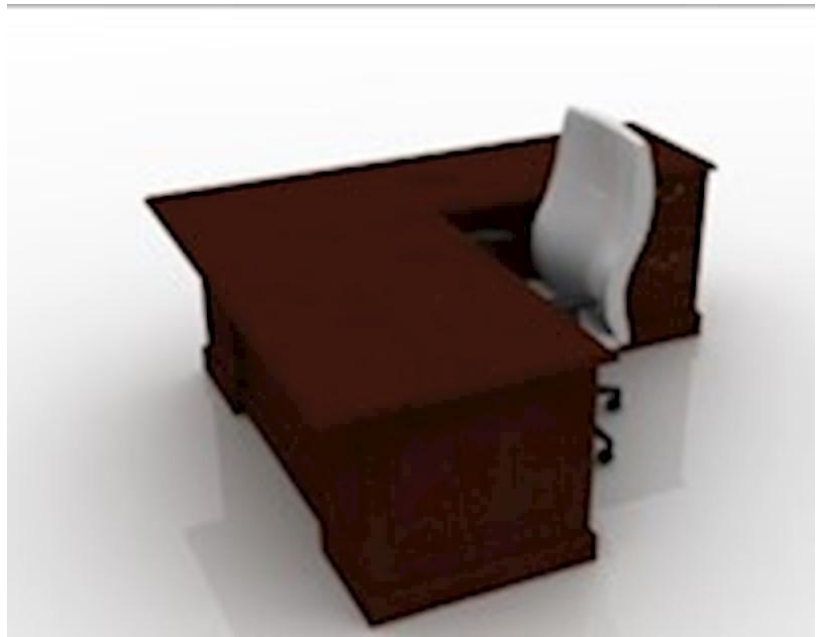
## BROGAN 30D X 66W SINGLE PEDESTAL DESK - LEFT

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 3 ea  
MODEL NUMBER: BG3066LD  
SIZE: 30d x 66w  
ORIENTATION: Left  
VENEER: Unspecified Veneer Selection  
PULL STYLE: Undecided Pull Style  
PEDESTAL CONFIGURATION: Shelf-Tray-Box-File  
DICTATION SLIDE: No Dictation Slide Selected  
ADDITIONAL GROMMETS: 1 Additional Grommet  
PULL COLOR: Undecided Pull Color  
TRIM MOLDING: Standard Angled Trim Molding  
ERGO ADJUSTABLE WORKSURFACE: No Option Selected  
LEATHER INLAY: No Leather Inlay



1174 - Secretary (1)

1 ea

1180 - Secretary

1 ea

2004 - Attorney/ Conf. (2)

1 ea

Arch  FFE

### NOTES

COMPANION RETURN BG2448ERR

### MANUFACTURER

JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

### MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# DE-02

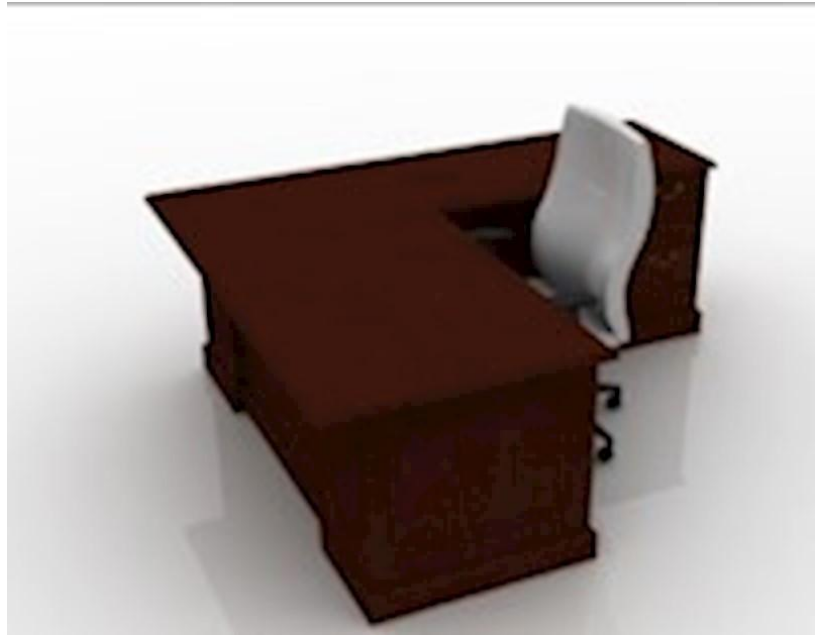
## BROGAN 30D X 66W SINGLE PEDESTAL DESK - RIGHT

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 5 ea  
 MODEL NUMBER: BG3066RD  
 SIZE: 30d x 66w  
 ORIENTATION: Right  
 VENEER: Unspecified Veneer Selection  
 PULL STYLE: Undecided Pull Style  
 PEDESTAL CONFIGURATION: Shelf-Tray-Box-File  
 DICTATION SLIDE: No Dictation Slide Selected  
 ADDITIONAL GROMMETS: 1 Additional Grommet  
 PULL COLOR: Undecided Pull Color  
 TRIM MOLDING: Standard Angled Trim Molding  
 ERGO ADJUSTABLE WORKSURFACE: No Option Selected  
 LEATHER INLAY: No Leather Inlay



1167 - Staff Attorney (2) 1 ea

1171 - Secretary (2) 1 ea

1176 - Staff Attorney (1) 1 ea

1182 - Staff Attorney 1 ea

2006 - Attorney/ Conf. (3) 1 ea

Arch  FFE

### NOTES

COMPANION RETURN BG2448ELR

### MANUFACTURER

JSI FURNITURE  
 225 CLAY STREET  
 JASPER, INDIANA  
 USA, 47546

### MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

**DE-03**  
**EXECUTIVE OFFICE**  
**DESK**

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 5 ea  
 MODEL NUMBER: BG3672ED  
 SIZE: 36x72  
 ORIENTATION: Freestanding  
 VENEER: Unspecified  
 PULL STYLE: Unspecified  
 PEDESTAL CONFIGURATION: Shelf-Tray-Box-File  
 DICTATION SLIDE: No Dictation Slide Selected  
 ADDITIONAL GROMMETS: 1 Additional Grommet  
 PULL COLOR: Unspecified  
 TRIM MOLDING: Angled Trim Molding  
 ERGO ADJUSTABLE WORKSURFACE: No Option Selected



1163 - Visiting Judge	1 ea
1166 - Judge Office 1	1 ea
1175 - Judge Office 2	1 ea
1181 - Judge Office 3	1 ea
2091 - Office (1)	1 ea

Arch  FFE

MANUFACTURER  
 JSI FURNITURE  
 225 CLAY STREET  
 JASPER, INDIANA  
 USA, 47546

MANUFACTURER CONTACT  
 800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# DE-05

## DESK- SINGLE- PEDESTAL, RIGHT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

- QUANTITY: 3 ea
- MODEL NUMBER: CRDSKSPR
- SIZE: Modular
- DEPTH: 30.0000
- WIDTH: 72.0000
- THICKNESS: 1.1250
- TOP SURFACE FINISH GROUP: Woodgrain HPL
- TOP SURFACE FINISH: 2538 CLEAR WALNUT
- EDGE FINISH GROUP: Plastic - PG1
- EDGE FINISH: 6245 CLEAR WALNUT
- CASE FINISH GROUP: Solid HPL
- CASE FINISH: 2885: DUNE
- HEADSET FINISH GROUP: Solid HPL
- HEADSET FINISH: 2885: DUNE
- LOCK FINISH GROUP: Polished Chrome
- LOCK FINISH: 9201: POLISHED CHROME
- PULL STYLE: Nile Pull
- PULL FINISH GROUP: Smooth Metallic
- PULL COLOR: 4799: PLATINUM METALLIC
- SUPPORT - LEFT: Full Depth End Panel
- SUPPORT - RIGHT: Box/Box/File Pedestal
- MODESTY PANEL: Full
- COUNTERWEIGHT: With Counterweight
- GROMMET LOCATION: No Grommet
- KEYS: Key Plug



### NOTES

COMPANION RETURN: DR-04

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1082 - Front Desk

3 ea

- Arch
- FFE

# DE-06

## DESK- SINGLE-PEDESTAL, LEFT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 1 ea  
 MODEL NUMBER: CRDSKSPL  
 SIZE: Modular  
 DEPTH: 30.0000  
 WIDTH: 72.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2422 MEDIUM CHERRY  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 2422 MEDIUM CHERRY  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2HMG MERLE  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2HMG MERLE  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - LEFT: Box/Box/File Pedestal  
 SUPPORT - RIGHT: Full Depth End Panel  
 MODESTY PANEL: Full  
 COUNTERWEIGHT: With Counterweight  
 GROMMET: No Grommet  
 LOCATION:  
 KEYS: Key Plug



### NOTES

COMPANION RETURN: DR-05

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1117A - CLERICAL WORKSPACE

1 ea

Arch  FFE



# DE-07

## DESK- SINGLE-PEDESTAL, RIGHT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 1 ea  
 MODEL NUMBER: CRDSKSPR  
 SIZE: Modular  
 DEPTH: 30.0000  
 WIDTH: 72.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2422 MEDIUM CHERRY  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 2422 MEDIUM CHERRY  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2871 BLACKENED BRONZE PATINA  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2871 BLACKENED BRONZE PATINA  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - LEFT: Full Depth End Panel  
 SUPPORT - RIGHT: Box/Box/File Pedestal  
 MODESTY PANEL: Full  
 COUNTERWEIGHT: With Counterweight  
 GROMMET: No Grommet  
 LOCATION:  
 KEYS: Key Plug



### NOTES

COMPANION RETURN: DR-06

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1004 - Open Office (1)

1 ea

Arch  FFE

# DE-08

## DESK- SINGLE-PEDESTAL, LEFT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 2 ea  
 MODEL NUMBER: CRDSKSPL  
 SIZE: Modular  
 DEPTH: 30.0000  
 WIDTH: 72.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2422 MEDIUM CHERRY  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 2422 MEDIUM CHERRY  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2871 BLACKENED BRONZE PATINA  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2871 BLACKENED BRONZE PATINA  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - LEFT: Box/Box/File Pedestal  
 SUPPORT - RIGHT: Full Depth End Panel  
 MODESTY PANEL: Full  
 COUNTERWEIGHT: With Counterweight  
 GROMMET: No Grommet  
 LOCATION:  
 KEYS: Key Plug



### NOTES

COMPANION RETURN: DR-07

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1004 - Open Office (1)

2 ea

Arch  FFE

# DE-09

## DESK- SINGLE-PEDESTAL, LEFT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 4 ea  
 MODEL NUMBER: CRDSKSPL  
 SIZE: Modular  
 DEPTH: 30.0000  
 WIDTH: 72.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2538 CLEAR WALNUT  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 6245 CLEAR WALNUT  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2885: DUNE  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2885: DUNE  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - LEFT: Full Depth End Panel  
 SUPPORT - RIGHT: Box/Box/File Pedestal  
 MODESTY PANEL: Full  
 COUNTERWEIGHT: With Counterweight  
 GROMMET LOCATION: No Grommet  
 KEYS: Key Plug



### NOTES

COMPANION RETURN: DR-03

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1082 - Front Desk

4 ea

Arch  FFE

# DE-10

## BROGAN 36D X 72W SINGLE PEDESTAL DESK - RIGHT

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 4 ea  
 MODEL NUMBER: BG3672RD  
 SIZE: 36d x 72w  
 ORIENTATION: No Return  
 VENEER: Undecided Veneer Selection  
 PULL STYLE: Undecided Pull Style  
 PEDESTAL CONFIGURATION: Shelf-Tray-Box-File (Standard)  
 DICTATION SLIDE: No Dictation Slide Selected  
 ADDITIONAL GROMMETS: No Additional Grommets Selected  
 PULL COLOR: Undecided Pull Color  
 TRIM MOLDING: Standard Angled Trim Molding  
 ERGO ADJUSTABLE WORKSURFACE: No Option Selected  
 LEATHER INLAY: No Leather Inlay



2138 - Courtroom 5 1 ea

E-2037 - Courtroom 1 1 ea

E-2050 - Courtroom 2 1 ea

E-2080 - Courtroom 4 1 ea

Arch  FFE

### MANUFACTURER

JSI FURNITURE  
 225 CLAY STREET  
 JASPER, INDIANA  
 USA, 47546

### MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

**DE-11**  
**BROGAN 30D X 66W**  
**SINGLE PEDESTAL DESK**  
**- RIGHT**

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 1 ea  
MODEL NUMBER: BG3066RD  
SIZE: 30d x 66w  
ORIENTATION: No Return  
VENEER: Undecided Veneer Selection  
PULL STYLE: Undecided Pull Style  
PEDESTAL CONFIGURATION: Shelf-Tray-Box-File (Standard)  
DICTATION SLIDE: No Dictation Slide Selected  
ADDITIONAL GROMMETS: No Additional Grommets Selected  
PULL COLOR: Undecided Pull Color  
TRIM MOLDING: Standard Angled Trim Molding  
ERGO ADJUSTABLE WORKSURFACE: No Option Selected  
LEATHER INLAY: No Leather Inlay



E-2057 - Courtroom 3

1 ea

Arch  FFE

MANUFACTURER  
JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

MANUFACTURER CONTACT  
800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# DE-12

## DESK- SINGLE-PEDESTAL, RIGHT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

- QUANTITY: 3 ea
- MODEL NUMBER: CRDSKSPR
- SIZE: Modular
- DEPTH: 30.0000
- WIDTH: 72.0000
- THICKNESS: 1.1250
- TOP SURFACE FINISH GROUP: Woodgrain HPL
- TOP SURFACE FINISH: 2538 CLEAR WALNUT
- EDGE FINISH GROUP: Plastic - PG1
- EDGE FINISH: 6245 CLEAR WALNUT
- CASE FINISH GROUP: Solid HPL
- CASE FINISH: 2885: DUNE
- HEADSET FINISH GROUP: Solid HPL
- HEADSET FINISH: 2885: DUNE
- LOCK FINISH GROUP: Polished Chrome
- LOCK FINISH: 9201: POLISHED CHROME
- PULL STYLE: Nile Pull
- PULL FINISH GROUP: Smooth Metallic
- PULL COLOR: 4799: PLATINUM METALLIC
- SUPPORT - LEFT: Full Depth End Panel
- SUPPORT - RIGHT: Box/Box/File Pedestal
- MODESTY PANEL: Full
- COUNTERWEIGHT: With Counterweight
- GROMMET: No Grommet
- LOCATION:
- KEYS: Key Plug



### NOTES

NO RETURN

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

E-2092 - Open Office

3 ea

- Arch
- FFE

# DOH-01

## OVERHEAD- STACKING, HINGED DOORS

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 3 ea  
 MODEL NUMBER: CROHSHD  
 SIZE: Modular  
 WIDTH: 72.0000  
 APPLICATION HEIGHT: 66.5000  
 HEIGHT: 38.00748  
 THICKNESS: 1.1250  
 TACKBOARD: With Tackboard  
 TACKBOARD FINISH GROUP: With Light Valance  
 TACKBOARD FINISH: Dovetail  
 FABRIC DIRECTION: Horizontal  
 ATTACHMENT BRACKETS: Suspended Between Towers  
 CASE FINISH GROUP: Solid LPL  
 CASE FINISH: 2L85: DUNE  
 HEADSET FINISH GROUP: Solid LPL  
 HEADSET FINISH: 2L85: DUNE  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 KEYS: Key Plug  
 TOP: High Pressure Laminate  
 TOP SURFACE FINISH: 2422 MEDIUM CHERRY



### NOTES

COMPANION SPECS: DE-07, DE-08

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1004 - Open Office (1)

3 ea

Arch  FFE

**BROGAN 24D X 48W  
EXECUTIVE RETURN -  
RIGHT**

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 3 ea  
 MODEL NUMBER: BG2448ELR  
 SIZE: 24D X 48W  
 ORIENTATION: Right  
 VENEER: Undecided Veneer Selection  
 PEDESTAL CONFIGURATION: File/File (Standard)  
 PULL STYLE: Undecided Pull Style  
 ADDITIONAL GROMMETS: No Additional Grommets Selected  
 PULL COLOR: Undecided Pull Color  
 ERGO ADJUSTABLE WORKSURFACE: No Option Selected  
 TRIM MOLDING: Standard Angled Trim Molding



1174 - Secretary (1) 1 ea  
 1180 - Secretary 1 ea  
 2004 - Attorney/ Conf. (2) 1 ea

Arch  FFE

NOTES

COMPANION - BG3672LD

MANUFACTURER

JSI FURNITURE  
 225 CLAY STREET  
 JASPER, INDIANA  
 USA, 47546

MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)



# DR-02

## BROGAN 24D X 48W EXECUTIVE RETURN - LEFT

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 5 ea  
 MODEL NUMBER: BG2448ERR  
 SIZE: 24D X 48D  
 ORIENTATION: Left  
 VENEER: Undecided Veneer Selection  
 PEDESTAL CONFIGURATION: File/File (Standard)  
 PULL STYLE: Undecided Pull Style  
 ADDITIONAL GROMMETS: No Additional Grommets Selected  
 PULL COLOR: Undecided Pull Color  
 ERGO ADJUSTABLE WORKSURFACE: No Option Selected  
 TRIM MOLDING: Standard Angled Trim Molding



- 1167 - Staff Attorney (2) 1 ea
- 1171 - Secretary (2) 1 ea
- 1176 - Staff Attorney (1) 1 ea
- 1182 - Staff Attorney 1 ea
- 2006 - Attorney/ Conf. (3) 1 ea

### NOTES

COMPANION - BG3672RD

### MANUFACTURER

JSI FURNITURE  
 225 CLAY STREET  
 JASPER, INDIANA  
 USA, 47546

### MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

Arch  FFE

# DR-03

## RETURN- SINGLE- PEDESTAL, RIGHT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 4 ea  
 MODEL NUMBER: CRRNSPR  
 SIZE: Modular  
 DEPTH: 24.0000  
 WIDTH: 42.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2538 CLEAR WALNUT  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 6245 CLEAR WALNUT  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2885: DUNE  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2885: DUNE  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - RIGHT: File/File Pedestal  
 MODESTY PANEL: Full  
 GROMMET LOCATION: No Grommet  
 KEYS: Key Plug  
 SUPPORT - LEFT: None



### NOTES

COMPANION DESK: DE-09

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1082 - Front Desk

4 ea

Arch  FFE

# DR-04

## RETURN- SINGLE- PEDESTAL, LEFT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 3 ea  
 MODEL NUMBER: CRRSNSPL  
 SIZE: Modular  
 DEPTH: 24.0000  
 WIDTH: 42.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2538 CLEAR WALNUT  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 6245 CLEAR WALNUT  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2885: DUNE  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2885: DUNE  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - RIGHT: None  
 MODESTY PANEL: Full  
 GROMMET LOCATION: No Grommet  
 KEYS: Key Plug  
 SUPPORT - LEFT: File/File Pedestal



### NOTES

COMPANION DESK: DE-05

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1082 - Front Desk

3 ea

Arch  FFE

# DR-05

## RETURN- SINGLE- PEDESTAL, RIGHT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 1 ea  
 MODEL NUMBER: CRRSNSPL  
 SIZE: Modular  
 DEPTH: 24.0000  
 WIDTH: 42.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2422 MEDIUM CHERRY  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 2422 MEDIUM CHERRY  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2HMG MERLE  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2HMG MERLE  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - RIGHT: File/File Pedestal  
 MODESTY PANEL: Full  
 GROMMET LOCATION: No Grommet  
 KEYS: Key Plug  
 SUPPORT - LEFT: None



### NOTES

COMPANION DESK: DE-06

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1117A - CLERICAL WORKSPACE

1 ea

Arch  FFE

# DR-06

## RETURN- SINGLE-PEDESTAL, LEFT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 1 ea  
 MODEL NUMBER: CRRSNSPL  
 SIZE: Modular  
 DEPTH: 24.0000  
 WIDTH: 42.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2422 MEDIUM CHERRY  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 2422 MEDIUM CHERRY  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2871 BLACKENED BRONZE PATINA  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2871 BLACKENED BRONZE PATINA  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - RIGHT: None  
 MODESTY PANEL: Full  
 GROMMET LOCATION: No Grommet  
 KEYS: Key Plug  
 SUPPORT - LEFT: File/File Pedestal



### NOTES

COMPANION RETURN: DE-07

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1004 - Open Office (1)

1 ea

Arch  FFE

# DR-07

## RETURN- SINGLE- PEDESTAL, RIGHT HAND

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 2 ea  
 MODEL NUMBER: CRRNSPR  
 SIZE: Modular  
 DEPTH: 24.0000  
 WIDTH: 42.0000  
 THICKNESS: 1.1250  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2422 MEIDUM CHERRY  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 2422 MEDIUM CHERRY  
 CASE FINISH GROUP: Solid HPL  
 CASE FINISH: 2871 BLACKENED BRONZE PATINA  
 HEADSET FINISH GROUP: Solid HPL  
 HEADSET FINISH: 2871 BLACKENED BRONZE PATINA  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 SUPPORT - RIGHT: File/File Pedestal  
 MODESTY PANEL: Full  
 GROMMET LOCATION: No Grommet  
 KEYS: Key Plug  
 SUPPORT - LEFT: None



### NOTES

COMPANION DESK: DE-08

### MANUFACTURER

STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

### MANUFACTURER CONTACT

616.247.2710  
 WWW.STEELCASE.COM

1004 - Open Office (1)

2 ea

Arch  FFE

# JC-01

## JURY CHAIRS

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 97 ea  
MODEL NUMBER: 981C  
MODEL NAME: Boston Chair  
WOOD SPECIES: Undecided  
FINISH: Undecided  
FABRIC VENDOR: COM Ultrafabrics  
FABRIC PATTERN: Ultraleather  
FABRIC COLOR: Diplomat Blue  
CASTERS: None  
TRIM NAILS: None  
GLIDE TYPE: None

2138 - Courtroom 5	15 ea
E-2037 - Courtroom 1	15 ea
E-2050 - Courtroom 2	37 ea
E-2057 - Courtroom 3	15 ea
E-2080 - Courtroom 4	15 ea

Arch  FFE



COM Ultrafabrics  
Brisa Original  
Cambridge Blue

MANUFACTURER  
JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

MANUFACTURER CONTACT

800.457.4511

[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# KC-01

## BROGAN 24D X 72W KNEESPACE CREDENZA

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 5 ea  
 MODEL NUMBER: BG2472KC  
 VENEER: Unspecified  
 LEFT SIDE STORAGE: File/File  
 RIGHT SIDE STORAGE: File/File  
 ADDITIONAL GROMMETS: 1 Additional Grommet  
 TRIM MOLDING: Angled Trim Molding  
 PULL STYLE: Unspecified  
 PULL COLOR: Unspecified  
 ERGO ADJUSTABLE WORKSURFACE: No Option Selected



1163 - Visiting Judge	1 ea
1166 - Judge Office 1	1 ea
1175 - Judge Office 2	1 ea
1181 - Judge Office 3	1 ea
2091 - Office (1)	1 ea

Arch  FFE

MANUFACTURER  
 JSI FURNITURE  
 225 CLAY STREET  
 JASPER, INDIANA  
 USA, 47546

MANUFACTURER CONTACT  
 800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)



# LF-01

## LATERAL 2 HIGH FILE/FILE

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 3 ea  
 MODEL NUMBER: CRL2H  
 SIZE: Modular  
 DEPTH: 24.0000  
 WIDTH: 30.0000  
 TOP: With Top  
 APPLICATION: Full  
 THICKNESS: 1.1250  
 CASE FINISH GROUP: Solid LPL  
 CASE FINISH: 2L85: DUNE  
 HEADSET FINISH GROUP: Solid LPL  
 HEADSET FINISH: 2L85: DUNE  
 TOP SURFACE FINISH GROUP: Woodgrain HPL  
 TOP SURFACE FINISH: 2422: MEDIUM CHERRY  
 EDGE FINISH GROUP: Plastic - PG1  
 EDGE FINISH: 6036: MEDIUM CHERRY  
 PULL STYLE: Nile Pull  
 PULL FINISH GROUP: Smooth Metallic  
 PULL COLOR: 4799: PLATINUM METALLIC  
 LOCK FINISH GROUP: Polished Chrome  
 LOCK FINISH: 9201: POLISHED CHROME  
 KEYS: Key Plug  
 COUNTERWEIGHT: With Counterweight



MANUFACTURER  
 STEELCASE  
 901 44TH STREET SE  
 GRAND RAPIDS, MICHIGAN  
 USA, 49508-7594

MANUFACTURER CONTACT  
 616.247.2710  
 WWW.STEELCASE.COM

1004 - Open Office (1)

3 ea

Arch  FFE

# LT-01

## BROGAN 42D X 96W CONFERENCE TABLE WITH PANEL BASES

QUANTITY: 12 ea  
MODEL NUMBER: BG4296CTP  
VENEER: Undecided Veneer Selection  
TRIM MOLDING: Standard Angled Trim Molding

2138 - Courtroom 5	2 ea
E-2037 - Courtroom 1	2 ea
E-2050 - Courtroom 2	4 ea
E-2057 - Courtroom 3	2 ea
E-2080 - Courtroom 4	2 ea

Arch    FFE  
   

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809



### MANUFACTURER

JSI FURNITURE  
225 CLAY STREET  
JASPER, INDIANA  
USA, 47546

### MANUFACTURER CONTACT

800.457.4511  
[HTTPS://WWW.JSIFURNITURE.COM/](https://www.jsifurniture.com/)

# PE-01

## NEW PEWS FOR COURTROOM SEATING

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 2 ea  
DESCRIPTION: Custom Pews to match existing courtrooms  
FINISH: Undecided

2138 - Courtroom 5

2 ea

Arch  FFE



### NOTES

SMALL PEWS - APPROXIMATELY 126" L X 20" D - MUST BE VERIFIED IN FIELD & WITH CORPORATE STUDIO

# PE-02

## NEW PEWS FOR COURTROOM SEATING

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 2 ea  
DESCRIPTION: Custom Pews to match existing courtrooms  
FINISH: Undecided

2138 - Courtroom 5

2 ea

Arch  FFE



### NOTES

MEDIUM PEWS - APPROXIMATELY 144" L X 20" D - MUST BE VERIFIED IN FIELD & WITH CORPORATE STUDIO

# PE-03

## NEW PEWS FOR COURTROOM SEATING

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 4 ea  
DESCRIPTION: Custom Pews to match existing courtrooms  
FINISH: Undecided

2138 - Courtroom 5

4 ea

Arch  FFE



### NOTES

LARGE PEWS - APPROXIMATELY 168" L X 20" D - MUST BE VERIFIED IN FIELD & WITH CORPORATE STUDIO

# TB-01 JSI BROGAN 20X28 END TABLE

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 3 ea  
MODEL NUMBER: BG2028ET  
FINISH: Undecided

1171 - Secretary (2) 1 ea

1174 - Secretary (1) 1 ea

1180 - Secretary 1 ea

Arch FFE



## REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

CFA

FINISH SAMPLE

FLAME CERT

PROTOTYPE

SEAMING  
DIAGRAM

SHOP DWGS

STRIKE OFF

# TB-02

## BREAK ROOM TABLE

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 3 ea  
MODEL NUMBER: STRU-CU-4242-SQ  
MODEL NAME: Structure-Cube Conference Table, 42" x 42", Square Shape  
TABLE SHAPE: Square  
SIZE: 42"D x 42"W  
FINISH: Metallic Platinum (Matte)  
TOP: Wilsonart Crisp Linen  
EDGE: Standard Edge  
EDGE DETAIL: 3mm Vinyl Edge  
EDGE FINISH: Wilsonart Crisp Linen

1155 - Break 2 ea  
E-2092 - Open Office 1 ea

Arch  FFE



MANUFACTURER  
SPECIAL-T TABLES  
11820 WILLS ROAD, SUITE 140  
ALPHARETTA, GA  
USA, 30009

MANUFACTURER CONTACT  
888-705-0777  
WWW.SPECIALT.NET

### REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

- CFA       FINISH SAMPLE       FLAME CERT       PROTOTYPE       SEAMING DIAGRAM       SHOP DWGS       STRIKE OFF

**TB-03**  
**ATTORNEY/CLIENT**  
**TABLE**

COLUMBIA COUNTY COURTHOUSE #2024-B1115

ISSUED: 1/24/2024

640 RONALD REAGAN DR, EVANS, GA, USA, 30809

QUANTITY: 2 ea  
MODEL NUMBER: 1D.QUAT-3060  
MODEL NAME: Quatro Best Value  
TABLE SHAPE: Rectangle  
SIZE: 30"D x 60"W  
FINISH: Light Grey  
TOP: In Stock  
EDGE: Light Grey  
EDGE DETAIL: Light Grey  
EDGE FINISH: Light Grey

2124 - Attorney/ Conf. (4)

1 ea

2125 - Attorney/ Conf. (5)

1 ea



Arch    FFE  
   

MANUFACTURER

SPECIAL-T TABLES  
11820 WILLS ROAD, SUITE 140  
ALPHARETTA, GA  
USA, 30009

MANUFACTURER CONTACT

888-705-0777  
WWW.SPECIALT.NET

REQUIRED ITEMS FOR DESIGNER APPROVAL PRIOR TO FABRICATION

CFA     FINISH SAMPLE     FLAME CERT     PROTOTYPE     SEAMING DIAGRAM     SHOP DWGS     STRIKE OFF



## SECTION 125500

### DETENTION FURNITURE

#### PART 1 – GENERAL

##### 1.1 DESCRIPTION

The contoured benches shown on the plans and herein specified are the products of Kane Innovations, Erie, Pennsylvania. This manufacturer's name and products have been used to establish the standards of construction and quality of workmanship required for this project. Manufacturers bidding on this project must be actively engaged in the fabrication of specified items for a minimum of five (5) years prior to the bid date. Manufacturers requesting approval to bid their products as equal must submit to the Architect full-size drawings, including details of construction, and a complete contoured bench sample, ten (10) days prior to the bid date.

##### 1.2 SUBMITTALS

- A. Manufacturer shall submit shop drawings, showing details of attachment to surround materials and elevations showing scope of the project.
- B. Samples of materials as may be requested without cost to owner; frame sections, etc.

##### 1.3 WARRANTY

The contoured bench supplied by Kane Innovations on the designated project is warranted for one (1) year against any proven defective material or parts, as called for in the specifications and approved shop drawings. This warranty does not cover abuse by others.

#### PART 2 – PRODUCTS

##### 2.1 ACCEPTABLE MANUFACTURERS

Kane Innovations, Erie, PA – Model S-B29-C  
☎ (800) 773-2439  
[www.kaneinnovations.com](http://www.kaneinnovations.com)  
[help@kaneinnovations.com](mailto:help@kaneinnovations.com)

##### 2.2 MATERIAL

- A. Contoured bench shall be formed of 12-gauge steel.
- B. End plates shall be made of 12-gauge steel.
- C. Intermediate supports shall be made of 12-gauge steel.

##### 2.3 MOUNTING ANGLES

Mounting angles shall be 3" x 2" x ¼" structural steel angles which are continuous at floor and wall the length of each bench.

##### 2.4 FINISH

- A. All interior and exterior surfaces of the bench and mounting angles shall be thoroughly cleaned in a 5-step bonderizing process. The surfaces shall receive an electrostatically applied thermoplastic, polyester powder coating which shall be baked to a hard mar-resistant finish in Kane's standard gray.

##### 2.5 FABRICATION

- A. The bench shall be formed to contoured shape as shown on the contract drawing. End plates shall be continuously welded along contour and dressed smooth. Intermediate supports shall be located at 48" intervals and shall be stitch welded to back side of the bench.
- B. Sound deadening insulation shall be applied to the inside cavity of the bench. Sound deadening insulation does not completely fill the benches. Additional insulation, if required, is to be provided and installed by others.

##### 2.6 HARDWARE

- A. Each bench shall have all necessary installation hardware, including security head fastening screws.
- B. Each bench shall come fully assembled and tested from the factory.

#### PART 3 – EXECUTION

##### 3.1 INSPECTION

Verify that openings fit allowable tolerances are plumb, level, provide a solid anchoring surface and comply with approved shop drawings.

#### PART 4 - ENVIROMENTAL REPORTING

##### 4.1 LEED MATERIALS AND RESOURCES

- A. Recycled Content: This product contributes toward satisfying Credit 4 under LEED.
- B. Regional Material: This product can contribute toward satisfying Credit 5 under LEED.

**END OF SECTION 125500**

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**SECTION 130700.23**

**BULLET RESISTANT ALUMINUM FIXED VIEW WINDOW FRAMES**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. WORK INCLUDED:  
All labor, material, equipment, and services necessary to furnish and install bullet-resistant aluminum glazing frames to be located as shown on the construction drawings or as noted in the window schedule.
- B. RELATED DOCUMENTS:
  - 1. Underwriters Laboratory, UL 752, Current Edition, Standard for Bullet-Resisting Equipment

**1.2 QUALITY ASSURANCE**

- A. Ballistic Performance: Certification shall be furnished indicating that all materials have been tested in accordance with the appropriate test procedures.
- B. Obtain bullet-resistant components through one source from a single manufacturer.

**1.3 SUBMITTALS**

- A. Shop Drawings shall be submitted for approval prior to the fabrication of materials. The drawings shall include plan views, elevations, sections, and details of the proposed installation including attachment methods.
- B. Drawings shall indicate dimensions, component profiles, and material finishes.
- C. Manufacturer's warranty and product data, glazing product information, and installation instructions shall be included with the submittal package.

**1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING**

- A. Pack bullet-resistant glazing frames in wood crates for shipment. Glazing should be crated separately, unless frames are factory glazed.
- B. All items shall be delivered, stored, and handled in a manner that will not damage or deform.
- C. Abraded or scarred areas shall be cleaned, repaired, or replaced immediately upon detection. Damaged items that cannot be restored to like-new condition shall be replaced.
- D. Store crated glazing frames in a dry location on platforms or pallets that are adequately ventilated, free of dust, water, and other contaminants, and stored in a manner that permits easy access for inspection and handling.

**1.5 JOB CONDITIONS**

- A. Field Measurements: Contractor shall verify finished openings by field measurement prior to fabrication and indicate measurements on Shop Drawings.
  - 1. Established Dimensions: If field measurements cannot be made without causing a delay, establish opening dimensions and proceed with fabrication of bullet-resistant frames without field

measurements. Coordinate construction to insure that the actual finished-opening dimensions correspond to the established dimensions.

## 1.6 WARRANTY

- A. Warranty Period: Glazing frames shall be warranted for a period of 12 months from the date of substantial completion.
- B. Warranty is limited to material defects or workmanship and offered to Manufacturer's customers. Warranty is limited to replacement of product or refund of invoice price at Manufacturer's discretion. Installation, shipping or other cost is not included in this warranty.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. North American Bullet Proof, 106 Guadalupe Drive, P.O. Box 628, Cibolo, TX 78108. Phone 888.746.8427, Fax 210.225.0984.
- B. Chicago Bullet Proof, 2595 Bond Street University Park, IL 60484, Phone 708.534.9102

### 2.2 MATERIALS

- A. Bullet-Resistant Aluminum Glazing Frames:
  - 1. Model – Shotgard® Series Bullet-Resistant EXVW-A Aluminum Fixed-View Window.
  - 2. Frames and glazing shall be supplied to provide a complete assembly.
  - 3. Ballistic Resistance Performance Level: U.L. 752 Level 4.
  - 4. EXVW-A Aluminum Fixed-View Window to be constructed of anodized aluminum frame, snap cover, and stop extrusions.
  - 5. Frame Profile: 2" x 4½" non-thermal frame, lined with steel as required for ballistic protection level, with removable stop.
  - 6. Mullion and Rail Profiles: 3" x 4½", lined with steel as required for ballistic protection level, with removable stop.
  - 7. Testing: Independently tested to U.L. 752 to level specified.
- B. Exterior Aluminum Panning: Extruded aluminum, 6063-T6 alloy and temper, extruded to profiles and details indicated. Seal exterior joints with manufacturer's sealant to assure water tight joints.
  - 1. Exterior Panning and Trims: All panning profiles shall be a minimum thickness of 0.062" to match the profiles shown on the drawings. Any profile variations shall be submitted to the Architect for approval. All panning shall be factory fabricated for field assembly. All corner joinery shall be factory cut. Joinery at the sill shall be coped and butt type construction. All preparations for assembly shall be provided by the window manufacturer. Upon assembly, panning frame joins shall be back-sealed to prevent moisture penetration.

### 2.3 COMPONENTS

- A. Glazing: Glazing shall be field installed. Glazing material shall be factory-fabricated units designed to be bullet-resistant to the specified level. Glazing material shall be glass-clad polycarbonate with a no-spall protected interior face. No-spall interior face shall meet or exceed requirements for spall resistance defined in U.L. 752
- B. Setting Blocks: provide ¼" x 1" x 4" rubber setting blocks for installation at the sill.
- C. Wedges and Gaskets: Provide interior wedge and exterior gasket in sizes appropriate for glazing thickness

- D. Anchors and Sealants to be provided by installer.

## **2.4 FABRICATION**

- A. General: Fabricate bullet-resistant glazing frames to comply with indicated standards. Include a complete system for assembly and installation of bullet-resistant glazing frames.
  - 1. Provide frames that are capable of being reglazed from the secure side without dismantling the threat side of the frame.
  - 2. Prepare frames for glazing in the field.
  - 3. Aluminum shall be free of scratches and finish work shall be neat and free of defects.
- B. Framing: Straight-cut aluminum extrusions, fastened with no. 14 stainless steel screws into frames at corners (extruded screw boss)
  - 1. Install armor inside the frame in the thickness necessary for the ballistic resistance level indicated.
  - 2. Install snap covers over armor pocket
- C. Mullions/Rails: Straight-cut aluminum extrusions, fastened with no. 14 stainless steel screws into frames (extruded screw boss).
- D. Glazing Stops: Provide a snap-in-place, removable glazing stop on the secure side of the frame.
  - 1. Stops shall be of the appropriate size for the glazing thickness.
  - 2. Glazing stop finish to match frame finish.
  - 3. The threat-side glazing stop shall be integral to the glazing frame.
- E. Metal Protection: Separate dissimilar metals to protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
- F. Any openings in glazing for speak-thru devices are to be factory-cut.
- G. No field alterations to the construction of the units fabricated under the specified standards shall be allowed unless approved by the manufacturer.

## **2.5 FINISHES**

- 1. Provide aluminum components with a fluoropolymer finish.
  - a. Color selection: To match existing.

## **2.6 LABELING**

- A. Bullet-resistant glazing frames shall be plainly and permanently labeled. The label shall be compatible with finishes. The label shall be visible only on the secure side, after installation, and shall include:
  - 1. Manufacturer's name or identifying symbol.
  - 2. Model Number.
  - 3. Date of manufacture by month and year. This may be done through use of lot number or other traceable code.
  - 4. Correct mounting position including threat side and secure side (by removable label on glazing material).
  - 5. Code indicating bullet-resistant rating and test standard used (by removable label on glazing material).

## **PART 3 – EXECUTION**

### **3.1 INSPECTION**

- A. Upon delivery, the contractor shall open the crate and inspect the contents for freight damage. If damaged, notify the freight company of the claim. Check the packing list to make sure all items are present. If any items are missing, notify the Manufacturer..
- B. Prior to commencing installation, the contractor shall examine all areas to receive the bullet-resistant glazing frames to ensure that they are ready for installation. Components shall be checked and corrected for racking, twisting, and other malformation prior to installation. All surfaces and connections shall be examined for damage prior to installation.
- C. The contractor shall verify that the glazing frames comply with indicated requirements for type, size, and location.
- D. Do not proceed with installation until unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- A. The Contractor shall field verify dimensions of the finished openings. EXVW-A aluminum frames must be installed in a plumb, level, and square finished opening. The finished opening must be ¼” larger in width and height than the window frame.

### **3.3 INSTALLATION**

- A. Install: Place the glazing frame unit in the opening, centered on wall. Mark the anchor holes. Remove the frame and drill the anchor holes. Install the frame and shim for plumb/level. Secure with anchors. Note: all anchors provided by installer.
- B. Finish: Seal all joints around the frame (sealant by installer). Wait until all sealants are cured before the next step.
- C. Glazing: (Best done by professional glass installer). Identify the secure and threat sides of the glazing. Remove any protective cover from the glazing. Install exterior gasket at the frame. Place the rubber setting blocks in the frame (at the sill only). Install glazing, making sure it fits properly. Install the removable stop and interior wedge.

### **3.4 CLEAN**

- A. Provide glass cleaning kit and instructions.
- B. Use care and strictly follow instructions included with shipment for cleaning the glazing

**END OF SECTION 130700.23**

## BULLET RESISTANT SECURITY GLAZING

TOTAL  
SECURITY  
SOLUTIONSPRODUCT  
SPECIFICATION SHEET

## COMPONENTS

Threat Layer 1: 1/8" Glass

Layer 2: .03 PVB

Layer 3: 3/8" Glass

Layer 4: .03 PVB

Layer 5: 3/8" Glass

Layer 6: 1/2" Air Gap

Layer 7: 1/8" Mar Resistant Polycarbonate

Layer 8: .025 Urethane

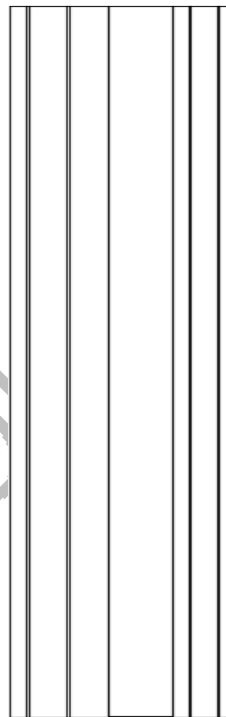
Layer 9: 3/16" Polycarbonate

Layer 10: .025 Urethane

Secure Layer 11: 1/8" Mar Resistant Polycarbonate

## GLASS CLAD POLYCARBONATE

PRODUCT: TSS 4-500 1 9/16"



## OPTIONS

- Reflective Glass
- One-Way Mirror
- Translucent White Interlayer (Frosted Layer)
- Tint (Gray, Bronze, Green, & Blue)
- Wire Glass
- Insulating Units
- Low E

More to choose from – Please inquire, as the size and thickness may not be available for every option.

## PROPERTIES &amp; SPECIFICATIONS

Protection	30-06 Cal.
Ballistic Data	Velocity 1: 2540 ft/s Velocity 2: 2794 ft/s
Light Transmission	66%
Nominal Thickness	1 9/16 " (1.55")
Weight	14.9 lbs/sqft
Dimensional Tolerance	ASTM C 1349

## BALLISTIC AND FORCED ENTRY RATING

- U.L. 752 Level 4 – .30-06 Cal.
- H.P. White TP-0500.01 Level II Forced Entry
- ASTM F-1233-93 Class III Seq. 16 Forced Entry
- WMFL Level II – 60 Minute Physical Attack

## STANDARDS

- NSI Z971-1984 Safety Glazing Materials for Building
- ASTM C 1036 Standard Specifications for Flat Glass
- ASTM C 1172 Standard Specification for Laminated Architectural Flat Glass

## HANDLING INFORMATION

It is imperative to clean the glazing unit during and after the construction period to maintain optimum performance and aesthetic properties. To clean, use a soft, clean cloth and a mild soap, detergent, or slightly acidic cleaning solution (such as vinegar). Wipe with a clean, lint-free cloth.

## STANDARD WARRANTY

- Five years from date of manufacture

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**SECTION 133419**

**METAL BUILDING SYSTEMS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Structural-steel framing.
  - 2. Metal roof panels.
  - 3. Metal soffit panels.

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of metal building system component.
- B. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and attachments to other work.
- C. Samples: For units with factory-applied finishes.
- D. Delegated Design Submittals: For metal building systems.
  - 1. Include analysis data indicating compliance with performance requirements and design data signed and sealed by the qualified professional engineer responsible for their preparation.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Welding certificates.
- B. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:
  - 1. Name and location of Project.
  - 2. Order number.
  - 3. Name of manufacturer.
  - 4. Name of Contractor.
  - 5. Building dimensions including width, length, height, and roof slope.
  - 6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
  - 7. Governing building code and year of edition.
  - 8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
  - 9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
  - 10. Building-Use Category: Indicate category of building use and its effect on load importance factors.
- C. Material test reports.
- D. Source quality-control reports.
- E. Field quality-control reports.

- F. Sample warranties.

#### **1.4 CLOSEOUT SUBMITTALS**

- A. Maintenance data.

#### **1.5 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A qualified manufacturer.
  - 1. Accreditation: Manufacturer's facility accredited according to IAS AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
  - 2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.
- B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.
- C. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
  - 2. AWS D1.3, "Structural Welding Code - Sheet Steel."

#### **1.6 WARRANTY**

- A. Special Warranty on Metal Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Finish Warranty Period: 20years from date of Substantial Completion.
- B. Special Weathertightness Warranty for Standing-Seam Metal Roof Panels: Manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that leak or otherwise fail to remain weathertight within specified warranty period.
  - 1. Warranty Period: 20years from date of Substantial Completion.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  - 1. Ostro Steel Structures, 7821 Clarks Mill Road, Louisville, GA 30434, Phone: (478) 625-7308, Website: [ostrostructures.com](http://ostrostructures.com)
  - 2. Or Approved Equal.

#### **2.2 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design metal building system.

- B. Structural Performance: Metal building systems to withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual."
1. Design Loads: Per IBC 2021.
  2. Deflection and Drift Limits:
    - a. Design metal building system assemblies to withstand serviceability design loads without exceeding deflections and drift limits recommended in AISC Steel Design Guide No. 3 "Serviceability Design Considerations for Steel Buildings."
    - b. No greater than the following:
      - 1) Purlins and Rafters: Vertical deflection of 1/240 of the span.
      - 2) Metal Roof Panels: Vertical deflection of 1/240 of the span.
      - 3) Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.
      - 4) Lateral Drift: Maximum of 1/100 of the building height.
- C. Seismic Performance: Metal building system to withstand the effects of earthquake motions determined according to ASCE/SEI 7
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
- E. Water Penetration for Metal Roof Panels: No water penetration when tested according to ASTM E1646 or ASTM E331 at the following test-pressure difference:
1. Test-Pressure Difference: 2.86 lbf/sq. ft.
- F. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
1. Uplift Rating: UL 60
  2. Fire/Windstorm Classification: Class 1A 75.
  3. Hail Resistance: MH.

### **2.3 STRUCTURAL-STEEL FRAMING**

- A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."
- B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
- C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.
- D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters and rake beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

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1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.
    - a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.
  2. Frame Configuration: One-directional, sloped
  3. Exterior Column: Tapered.
  4. Rafter: Tapered.
- E. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating, to comply with the following:
- F. Anchor Rods: Headed anchor rods as indicated in Anchor Rod Plan for attachment of metal building to foundation.

#### **2.4 METAL ROOF PANELS**

- A. Standing-Seam, Trapezoidal-Rib, Metal Roof Panels Formed with interlocking ribs at panel edges and intermediate stiffening ribs symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels.
1. Material: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.024-inch nominal uncoated steel thickness. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
    - a. Exterior Finish: Three-coat fluoropolymer.
    - b. Color: As selected by Architect from manufacturer's full range.
  2. Clips: One-piece fixed to accommodate thermal movement.
  3. Joint Type: Mechanically seamed.
  4. Panel Coverage: 24 inches
  5. Panel Height: 2 inches

#### **2.5 METAL SOFFIT PANELS**

- A. General: Provide factory-formed metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners inside laps. Include accessories required for weathertight installation.
- B. Metal Soffit Panels: Match profile and material of metal IR-Panel.
1. Finish: Match finish and color of metal roof panels.

#### **2.6 ACCESSORIES**

- A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
- B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
- C. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.
- D. Gutters: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch-long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."
  1. Gutter Supports: Fabricated from same material and finish as gutters.
  2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.
- E. Downspouts: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch nominal uncoated steel thickness, prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot-long sections, complete with formed elbows and offsets.
  1. Mounting Straps: Fabricated from same material and finish as gutters.

## **2.7 FABRICATION**

- A. General: Design components and field connections required for erection to permit easy assembly.
  1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
  2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members to be free of cracks, tears, and ruptures.
- B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.
- C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.
- D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.
- E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
  1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

## **2.8 SOURCE QUALITY CONTROL**

1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.
- B. Product will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

## **PART 3 - EXECUTION**

### **3.1 ERECTION OF STRUCTURAL FRAMING**

- A. Erect metal building system according to manufacturer's written instructions and drawings.
- B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.
- C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.
- D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
  1. Set plates for structural members on wedges, shims, or setting nuts as required.
  2. 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.
  3. 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.
- E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
  1. Level and plumb individual members of structure.
  2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

### **3.2 METAL PANEL INSTALLATION, GENERAL**

- A. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
  1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.
    - a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.
  2. Install metal panels perpendicular to structural supports unless otherwise indicated.
  3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
  4. Locate and space fastenings in uniform vertical and horizontal alignment.

5. Locate metal panel splices over structural supports with end laps in alignment.
  6. Lap metal flashing over metal panels to allow moisture to run over and off the material.
- B. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.
1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
- D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.
1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
  2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

### **3.3 METAL ROOF PANEL INSTALLATION**

- A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
1. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.
- B. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint, at location and spacing and with fasteners recommended by manufacturer.
1. Install clips to supports with self-drilling or self-tapping fasteners.
  2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
  3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
  4. Seamed Joint: Crimp standing seams with manufacturer-approved motorized seamer tool so that clip, metal roof panel, and factory-applied sealant are completely engaged.
  5. Rigidly fasten eave end of metal roof panels and allow ridge end free movement for thermal expansion and contraction. Predrill panels for fasteners.
  6. Provide metal closures at rake edges and rake walls.
- C. Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports with exposed fasteners at each lapped joint, at location and spacing recommended by manufacturer.
1. Provide metal-backed sealing washers under heads of exposed fasteners bearing on weather side of metal roof panels.
  2. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.

3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels, on side laps of ribbed or fluted metal panels, and elsewhere as needed to make metal panels weatherproof to driving rains.
  4. At metal panel splices, nest panels with minimum 6-inch end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.
- D. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

### **3.4 METAL SOFFIT PANEL INSTALLATION**

- A. Provide metal soffit panels the full width of soffits. Install panels perpendicular to support framing.
- B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

### **3.5 ACCESSORY INSTALLATION**

- A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
  2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
  3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.
- B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
  2. 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 weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.



- D. Downspouts: Join sections with 1-1/2-inch telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches o.c. in between.
  - 1. Provide elbows at base of downspouts to direct water away from building.
  - 2. Tie downspouts to underground drainage system indicated.

**3.6 FIELD QUALITY CONTROL**

- A. Product will be considered defective if it does not pass tests and inspections.
- B. Prepare test and inspection reports.

**END OF SECTION 133419**

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## SECTION 142400

### HYDRAULIC PASSENGER ELEVATORS

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. Section includes: Hydraulic passenger elevators as shown and specified. Elevator work includes:
1. Standard pre-engineered hydraulic passenger elevators.
  2. Elevator car enclosures, hoistway entrances and signal equipment.
  3. Operation and control systems.
  4. Jack(s).
  5. Accessibility provisions for physically disabled persons.
  6. Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity.
  7. Materials and accessories as required to complete the elevator installation.
- B. Related Sections:
1. Division 1 General Requirements: Meet or exceed all referenced sustainability requirements.
  2. Division 3 Concrete: Installing inserts, sleeves and anchors in concrete.
  3. Division 4 Masonry: Installing inserts, sleeves and anchors in masonry.
  4. Division 5 Metals:
    - a. Providing hoist beams, pit ladders, steel framing, auxiliary support steel and divider beams for supporting guide-rail brackets.
    - b. Providing steel angle sill supports and grouting hoistway entrance sills and frames.
  5. Division 9 Finishes: Providing elevator car finish flooring and field painting unfinished and shop primed ferrous materials.
  6. Division 16 Sections:
    - a. Providing electrical service to elevators, including fused disconnect switches.
    - b. Emergency power supply, transfer switch and auxiliary contacts.
    - c. Heat and smoke sensing devices.
    - d. Convenience outlets and illumination in control room, hoistway and pit.
  7. Division 22 Plumbing
    - a. Sump pit and oil interceptor.
  8. Division 23 Heating, Ventilation and Air Conditioning
    - a. Heating and ventilating hoistways and/or control room.
- C. Work Not Included: General contractor shall provide the following in accordance with the requirements of the Model Building Code and ANSI A17.1 Code. For specific rules, refer to ANSI A17.1, Part 3 for hydraulic elevators. State or local requirements must be used if more stringent. The cost of this work is not included in the thyssenkrupp Elevator's proposal, since it is a part of the building construction.
1. Elevator hoist beam to be provided at top of elevator shaft. Beam must be able to accommodate proper loads and clearances for elevator installation and operation.

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2. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports and bracing including all setting templates and diagrams for placement.
3. Hatch walls require a minimum two hours of fire rating. Hoistway should be clear and plumb with variations not to exceed 1/2" at any point.
4. Elevator hoistways shall have barricades, as required.
5. Install bevel guards at 75° on all recesses, projections or setbacks over 2" (4" for A17.1 2000 areas) except for loading or unloading.
6. Provide rail bracket supports at pit, each floor and roof. For guide rail bracket supports, provide divider beams between hoistway at each floor and roof.
7. Pit floor shall be level and free of debris. Reinforce dry pit to sustain normal vertical forces from rails and buffers.
8. Where pit access is by means of the lowest hoistway entrance, a vertical ladder of non-combustible material extending 42" minimum, (48" minimum for A17.1-2000 areas) shall be provided at the same height, above sill of access door or handgrips.
9. Machine room to be enclosed and protected.
10. Machine Room temperature must be maintained between 55° and 90° F.
11. If machine room is remote from the elevator hoistway, clear access must be available above the ceiling or metal/concrete raceways in floor for oil line and wiring duct from machine room.
12. Access to the machinery space and machine room must be in accordance with the governing authority or code.
13. Provide an 8" x 16" cutout through machine room wall, for oil line and wiring duct, coordinated with elevator contractor at the building site.
14. All wire and conduit should run remote from the hoistways.
15. When heat, smoke or combustion sensing devices are required, connect to elevator control cabinet terminals. Contacts on the sensors should be sided for 12 volt D.C.
16. Install and furnish finished flooring in elevator cab.
17. Finished floors and entrance walls are not to be constructed until after sills and door frames are in place. Consult elevator contractor for rough opening size. The general contractor shall supply the drywall framing so that the wall fire resistance rating is maintained, when drywall construction is used.
18. Where sheet rock or drywall construction is used for front walls, it shall be of sufficient strength to maintain the doors in true lateral alignment. Drywall contractor to coordinate with elevator contractor.
19. Before erection of rough walls and doors; erect hoistway sills, headers, and frames. After rough walls are finished; erect fascias and toe guards. Set sill level and slightly above finished floor at landings.
20. To maintain legal fire rating (masonry construction), door frames are to be anchored to walls and properly grouted in place.
21. The elevator wall shall interface with the hoistway entrance assembly and be in strict compliance with the elevator contractor's requirements.
22. General Contractor shall fill and grout around entrances, as required.
23. Elevator sill supports shall be provided at each opening.
24. All walls and sill supports must be plumb where openings occur.
25. For applications with jack hole, free and clear access to the elevator pit area for the jack hole-drilling rig is required.
26. Where jack hole is required, remove all spoils from jack hole drilling.

27. When not provided by Elevator Contractor, jack hole shall accommodate the jack unit. If required the jack hole is to be provided in strict accordance with the elevator contractor's shop drawings.
28. Locate a light fixture (200 lx / 19 fc) and convenience outlet in pit with switch located adjacent to the access door.
29. A light switch and fused disconnect switch for each elevator should be located inside the machine room adjacent to the door, where practical, per the National Electrical Code (NFPA No. 70).
30. For signal systems and power operated door: provide ground and branch wiring circuits, including main line switch.
31. For car light and fan: provide a feeder and branch wiring circuits, including main line switch.
32. Wall thickness may increase when fixtures are mounted in drywall. These requirements must be coordinated between the general contractor and the elevator contractor.
33. Provide supports, patching and recesses to accommodate hall button boxes, signal fixtures, etc.
34. Locate telephone and convenience outlet on control panel.
35. An emergency two way communication system shall be provided, per the International Building Code (IBC 2018, Chapter 30, Section 3001.2). The follows items should be included:
  - a. Is a visual and text based and a video based 24/7 live interactive system.
  - b. Is fully accessible by the deaf, hard of hearing and speech impaired, and shall include voice only options for hearing individuals.
  - c. Has the ability to communicate with emergency personnel utilizing existing video conferencing technology, chat/text software or approved technology.

## 1.2 SUBMITTALS

- A. Product data: When requested, the elevator contractor shall provide standard cab, entrance and signal fixture data to describe product for approval.
- B. Shop drawings:
  1. Show equipment arrangement in the corridor, pit, and hoistway and/or optional control room. Provide plans, elevations, sections and details of assembly, erection, anchorage, and equipment location.
  2. Indicate elevator system capacities, sizes, performances, safety features, finishes and other pertinent information.
  3. Show floors served, travel distances, maximum loads imposed on the building structure at points of support and all similar considerations of the elevator work.
  4. Indicate electrical power requirements and branch circuit protection device recommendations.
- C. Powder Coat paint selection: Submit manufacturer's standard selection charts for exposed finishes and materials.
- D. Plastic laminate selection: Submit manufacturer's standard selection charts for exposed finishes and materials.

E. Metal Finishes: Upon request, standard metal samples provided.

F. Operation and maintenance data. Include the following:

1. Owner's manuals and wiring diagrams.
2. Parts list, with recommended parts inventory.

### **1.3 QUALITY ASSURANCE**

A. Manufacturer Qualifications: An approved manufacturer with minimum 15 years of experience in manufacturing, installing, and servicing elevators of the type required for the project.

1. The manufacturer of machines, controllers, signal fixtures, door operators cabs, entrances, and all other major parts of elevator operating equipment.
  - a. The major parts of the elevator equipment shall be manufactured by the installing company, and not be an assembled system.
2. The manufacturer shall have a documented, on-going quality assurance program.
3. ISO-9001:2000 Manufacturer Certified
4. ISO-14001:2004 Environmental Management System Certified

B. Installer Qualifications: The manufacturer or an authorized agent of the manufacturer with not less than 15 years of satisfactory experience installing elevators equal in character and performance to the project elevators.

C. Regulatory Requirements:

1. ASME A17.1 Safety Code for Elevators and Escalators, latest edition or as required by the local building code.
2. Building Code: 2018 International Building Code (IBC).
3. NFPA 70 National Electrical Code.
4. NFPA 80 Fire Doors and Windows.
5. Americans with Disabilities Act - Accessibility Guidelines (ADAAG).
6. Section 407 in ICC A117.1, when required by local authorities.

D. Fire-rated entrance assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ASTM E2074, CAN4-S104 (ULC-S104), UL10(b), and NFPA Standard 80. Provide entrance assembly units bearing Class B or 1 1/2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).

E. Inspection and testing:

1. Elevator Installer shall obtain and pay for all required inspections, tests, permits and fees for elevator installation.
2. Arrange for inspections and make required tests.
3. Deliver to the Owner upon completion and acceptance of elevator work.

### **1.4 DELIVERY, STORAGE AND HANDLING**

- A. Manufacturing shall deliver elevator materials, components and equipment and the contractor is responsible to provide secure and safe storage on job site.

## **1.5 PROJECT CONDITIONS**

- A. Temporary Use: Elevators shall not be used for temporary service or for any other purpose during the construction period before Substantial Completion and acceptance by the purchaser unless agreed upon by Elevator Contractor and General Contractor with signed temporary agreement.
- B. Provide the hole for the jack unit (if required by the type of jack provided), based on excavation through normal soil or clay which can be removed by manual digging or by standard truck-mounted regular drilling unit. Provide a casing if required to retain the walls of the hole. General contractor shall remove excavation spoils deposited in the elevator pit.
  - 1. If a physical obstruction or hindrance is encountered below the ground surface, including boulders, rock, gravel, wood, metal, pilings, sand, water, quick sand, caves, public utilities or any other foreign material, obtain written authorization to proceed with excavating using special excavation equipment.
  - 2. Maintain a daily log of time and material costs involved.
  - 3. Elevator contractor will be compensated on a time and material basis for additional costs incurred after encountering the physical obstruction or hindrance, including the cost of the special excavation equipment.

## **1.6 WARRANTY**

- A. Warranty: Submit elevator manufacturer's standard written warranty agreeing to repair, restore or replace defects in elevator work materials and workmanship not due to ordinary wear and tear or improper use or care for 12 months after final acceptance.

## **1.7 MAINTENANCE**

- A. Furnish maintenance and call back service for a period of 12 months for each elevator after completion of installation or acceptance thereof by beneficial use, whichever is earlier, during normal working hours excluding callbacks.
  - 1. Service shall consist of periodic examination of the equipment, adjustment, lubrication, cleaning, supplies and parts to keep the elevators in proper operation. Maintenance work, including emergency call back repair service, shall be performed by trained employees of the elevator contractor during regular working hours.
  - 2. Submit parts catalog and show evidence of local parts inventory with complete list of recommended spare parts. Parts shall be produced by manufacturer of original equipment.
  - 3. Manufacturer shall have a service office and full time service personnel within a 100 mile radius of the project site.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturer: Design based around thyssenkrupp Elevator's endura hydraulic elevator.

## **2.2 MATERIALS, GENERAL**

- A. All Elevator Cab materials including frame, buttons, lighting, wall and ceiling assembly, laminates and carpet shall have an EPD and an HPD.
- B. Colors, patterns, and finishes: As selected by the Architect from manufacturer's full range of standard colors, patterns, and finishes.
- C. Steel:
  - 1. Shapes and bars: Carbon.
  - 2. Sheet: Cold-rolled steel sheet, commercial quality, Class 1, matte finish.
  - 3. Finish: Factory-applied baked enamel for structural parts, powder coat for architectural parts. Color selection must be based on elevator manufacture's standard selections.
- D. Plastic laminate: Decorative high-pressure type, complying with NEMA LD3, Type GP-50 General Purpose Grade, nominal 0.050" thickness. Laminate selection must be based on elevator manufacture's standard selections.
- E. Flooring by others.

## **2.3 HOISTWAY EQUIPMENT**

- A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded with a wood sub-floor. Underside of the platform shall be fireproofed. The car platform shall be designed and fabricated to support one-piece loads weighing up to 25% of the rated capacity.
- B. Sling: Steel stiles bolted or welded to a steel crosshead and bolstered with bracing members to remove strain from the car enclosure.
- C. Guide Rails: Steel, omega shaped, fastened to the building structure with steel brackets.
- D. Guides: Slide guides shall be mounted on top and bottom of the car.
- E. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on continuous channels fastened to the elevator guide rail or securely anchored to the pit floor. Provide extensions if required by project conditions.
- F. Jack: A jack unit shall be of sufficient size to lift the gross load the height specified. Factory test jack to ensure adequate strength and freedom from leakage. Brittle material, such as gray cast iron, is prohibited in the jack construction. Provide the following jack type: Twin post holeless telescopic 3-stage. Two jacks piped together, mounted one on each side of the car with each having three telescopic sections designed to extend in a synchronized manner when oil is pumped into the Assembly. Each jack section will be guided from within the casing or the plunger assembly used to house the section. Each plunger shall have a high pressure sealing system which will not allow for seal movement or displacement during the course of operation. A follower guide shall be furnished for the top of the lower two plungers and be guided by rollers running inside a steel guide channel which is firmly attached to the guide rail system. This plunger guide system shall maintain a stabilized support for the plunger sections. Each Jack Assembly shall



have check valves built into the assembly to allow for automatically re-syncing the three plunger sections by moving the jack to its fully contracted position..

- G. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the floor landings and correct for over travel or under travel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load.
- H. Wiring, Piping, and Oil: Provide all necessary hoistway wiring in accordance with the National Electrical Code. All necessary code compliant pipe and fittings shall be provided to connect the power unit to the jack unit. Provide proper grade inherently biodegradable oil as specified by the manufacturer of the power unit (see Power Unit section 2.04.G for further details)

## 2.4 POWER UNIT

- A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit consisting of the following items:
  - 1. An oil reservoir with tank cover.
  - 2. An oil hydraulic pump.
  - 3. An electric motor.
  - 4. An oil control valve with the following components built into single housing; high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and electro-magnetic controlling solenoids.
- B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.
- C. Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating shall be selected for specified speed and load.
- D. Oil Control Unit: The following components shall be built into a single housing. Welded manifolds with separate valves to accomplish each function are not acceptable. Adjustments shall be accessible and be made without removing the assembly from the oil line.
  - 1. Relief valve shall be adjustable and be capable of bypassing the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve.
  - 2. Up start and stop valve shall be adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and up stops.
  - 3. Check valve shall be designed to close quietly without permitting any perceptible reverse flow.
  - 4. Lowering valve and leveling valve shall be adjustable for down start speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" starts and stops. The leveling valve shall be designed to level the car to the floor in the direction the car is traveling after slowdown is initiated.

5. Provided with constant speed regulation in both up and down direction. Feature to compensate for load changes, oil temperature, and viscosity changes.
6. Solid State Starting: Provide an electronic starter featuring adjustable starting currents.
7. Oil Type: Provide a zinc free, inherently biodegradable lubricant formulated with premium base stocks to provide outstanding protection for demanding hydraulic systems, especially those operating in environmentally sensitive areas.

## **2.5 HOISTWAY ENTRANCES**

- A. Doors and Frames: Provide complete hollow metal type hoistway entrances at each hoistway opening bolted\knock down construction.
  1. Manufacturer's standard entrance design consisting of hangers, doors, hanger supports, hanger covers, fascia plates (where required), sight guards, and necessary hardware.
  2. Main landing door & frame finish: ASTM A1008 steel panels, factory applied powder coat finish with factory-applied powder coat finish entrance frame.
  3. Typical door & frame finish: ASTM A366 steel panels, factory applied powder coat enamel finish with factory-applied powder coat finish entrance frame.
- B. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code.
- C. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door.
  1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
  2. Hangers: Provide an adjustable device beneath the track to limit the up-thrust of the doors during operation.
  3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.
- D. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum.

## **2.6 PASSENGER ELEVATOR CAR ENCLOSURE**

- A. Car Enclosure:
  1. Walls: Cab type TKAP, reinforced cold-rolled steel with Stainless steel, no. 4 brushed finish As indicated on drawings by Interior Designer.
  2. Reveals and frieze: a. Reveals and frieze: Stainless steel, no. 4 brushed finish. As indicated on drawings by Interior Designer.
  3. Flooring: Luxury Vinyl Tile (LVT-2): Karndean Looselay Indiana LLT202. As indicated on drawings by Interior Designer.
  4. Canopy: Cold-rolled steel with hinged exit.
  5. Ceiling: Suspended type, LED lighting with translucent diffuser mounted in a metal frame. Framework shall be finished with a factory applied powder coat finish.
  6. Cab Fronts, Return, Transom, Soffit and Strike: Provide panels faced with brushed stainless steel.

7. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic sliding guides.
    - a. Door Finish: Stainless steel panels: No. 4 brushed finish.
    - b. Cab Sills: Extruded aluminum, mill finish.
  8. Handrail: Provide 1.5" diameter cylindrical metal on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, no. 4 brushed finish.
  9. Ventilation: Manufacturer's standard exhaust fan, mounted on the car top.
  10. Protection pads and buttons: Not required.
  11. Emergency elevator communication system for the deaf, hard of hearing and speech impaired, Provide a visual and text based and a video based 24/7 live interactive system.
- B. Car Top Inspection: Provide a car top inspection station with an "Auto-Inspection" switch, an "emergency stop" switch, and constant pressure "up and down" direction and safety buttons to make the normal operating devices inoperative. The station shall give the inspector complete control of the elevator. The car top inspection station shall be mounted in the door operator assembly.

## 2.7 DOOR OPERATION

- A. Door Operation: Provide a direct or alternating current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. The door control system shall be digital closed loop and the closed loop circuit shall give constant feedback on the position and velocity of the elevator door. The motor torque shall be constantly adjusted to maintain the correct door speed based on its position and load. All adjustments and setup shall be through the computer based service tool. Door movements shall follow a field programmable speed pattern with smooth acceleration and deceleration at the ends of travel. The mechanical door operating mechanism shall be arranged for manual operation in event of power failure. Doors shall automatically open when the car arrives at the landing and automatically close after an adjustable time interval or when the car is dispatched to another landing. AC controlled units with oil checks, or other deviations are not acceptable.
1. No Un-Necessary Door Operation: The car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as a dispatch car.
  2. Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated.
  3. Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car's current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel shall reverse and the door shall reopen to answer the other call.
  4. Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door closing is prevented for a field programmable time, a buzzer shall sound. When the obstruction is removed, the door shall begin to close at reduced speed. If the infra-red door protection

system detects a person or object while closing on nudging, the doors shall stop and resume closing only after the obstruction has been removed.

5. Door Reversal: If the doors are closing and the infra-red beam(s) is interrupted, the doors shall reverse and reopen. After the obstruction is cleared, the doors shall begin to close.
  6. Door Open Watchdog: If the doors are opening, but do not fully open after a field adjustable time, the doors shall recycle closed then attempt to open six times to try and correct the fault.
  7. Door Close Watchdog: If the doors are closing, but do not fully close after a field adjustable time, the doors shall recycle open then attempt to close six times to try and correct the fault.
  8. Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close.
- B. Door Protection Device: Provide a door protection system using microprocessor controlled infra-red light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen.

## **2.8 CAR OPERATING STATION**

- A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in an integral swing return panel requiring no applied faceplate. Wrap return shall have a brushed stainless steel finish. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons that illuminate using long lasting LED's shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for car light and accessories shall be provided.
- B. Emergency Communications System: Integral phone system provided.
- C. Auxiliary Operating Panel:
- D. Column Mounted Car Riding Lantern: A car riding lantern shall be installed in the elevator cab and located in the entrance. The lantern, when illuminated, will indicate the intended direction of travel. The lantern will illuminate and a signal will sound when the car arrives at a floor where it will stop. The lantern shall remain illuminated until the door(s) begin to close.
- E. Special Equipment: Not Applicable

## **2.9 CONTROL SYSTEMS**

- A. Controller: The elevator control system shall be microprocessor based and software oriented. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings.

- B. Automatic Light and Fan shut down: The control system shall evaluate the system activity and automatically turn off the cab lighting and ventilation fan during periods of inactivity. The settings shall be field programmable.
- C. Emergency Power Operation: (10-DOA) Upon loss of the normal power supply, building-supplied standby power is available on the same wires as the normal power supply. Once the loss of normal power is detected and standby power is available, the elevator is lowered to a pre-designated landing and the doors are opened. After passengers have exited the elevator, the doors are closed and the car is shut down. When normal power is restored, the elevator automatically resumes operation.
- D. Special Operation: Not Applicable

## **2.10 HALL STATIONS**

- A. Hall Stations, General: Buttons shall illuminate to indicate call has been registered at that floor for the indicated direction.
  - 1. Provide one pushbutton riser with faceplates having a brushed stainless steel finish.
    - a. Phase 1 firefighter's service key switch, with instructions, shall be incorporated into the hall station at the designated level.
- B. Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements.
- C. Hall Position Indicator: Not Applicable
- D. Hall lanterns: Not Applicable
- E. Special Equipment: Not Applicable

## **2.11 MISCELLANEOUS ELEVATOR COMPONENTS**

- A. Oil Hydraulic Silencer: Install multiple oil hydraulic silencers (muffler device) at the power unit location. The silencers shall contain pulsation absorbing material inserted in a blowout proof housing.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- A. Before starting elevator installation, inspect hoistway, hoistway openings, pits and/or control room, as constructed, verify all critical dimensions, and examine supporting structures and all other conditions under which elevator work is to be installed. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

### 3.2 INSTALLATION

- A. Install elevator systems components and coordinate installation of hoistway wall construction.
  - 1. Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1, manufacturer's installation instructions and approved shop drawings.
  - 2. Comply with the National Electrical Code for electrical work required during installation.
- B. Jack unit excavation (if required by the type of jack provided): Drill or otherwise excavate below elevator pit construction as required to install the jack unit.
  - 1. Install casing for jack unit.
  - 2. Provide HDPE jack protection system for all in ground jacks.
  - 3. Set casing for jack unit assembly plumb, and partially fill with water settled sand, eliminating voids. Back fill depth shall be sufficient to hold the bottom of the jack in place over time.
- C. Perform work with competent, skilled workmen under the direct control and supervision of the elevator manufacturer's experienced foreman.
- D. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports, and bracing including all setting templates and diagrams for placement.
- E. Welded construction: Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualification of welding operators.
- F. Coordination: Coordinate elevator work with the work of other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work.
- G. Install machinery, guides, controls, car and all equipment and accessories to provide a quiet, smoothly operating installation, free from side sway, oscillation or vibration.
- H. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum safe, workable dimensions at each landing.
- I. Erect hoistway sills, headers, and frames before erection of rough walls and doors; erect fascia and toe guards after rough walls finished. Set sill units accurately aligned and slightly above finish floor at landings.
- J. Lubricate operating parts of system, where recommended by manufacturer.

### **3.3 FIELD QUALITY CONTROL**

- A. Acceptance testing: Upon completion of the elevator installation and before permitting use of elevator, perform acceptance tests as required and recommended by Code and governing regulations or agencies. Perform other tests, if any, as required by governing regulations or agencies.
- B. Advise Owner, Contractor, Architect, and governing authorities in advance of dates and times tests are to be performed on the elevator.

### **3.4 ADJUSTING**

- A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.

### **3.5 CLEANING**

- A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with manufacturer's recommendations for type of material and finish provided. Stainless steel shall be cleaned with soap and water and dried with a non-abrasive surface; it shall not be cleaned with bleach-based cleansers.
- B. At completion of elevator work, remove tools, equipment, and surplus materials from site. Clean equipment rooms and hoistway. Remove trash and debris.
  - 1. Use environmentally preferable and low VOC emitting cleaners for each application type. Cleaners that contain solvents, pine and/or citrus oils are not permitted.

### **3.6 PROTECTION**

- A. At time of Substantial Completion of elevator work, or portion thereof, provide suitable protective coverings, barriers, devices, signs, or other such methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.

### **3.7 DEMONSTRATION**

- A. Instruct Owner's personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.
- B. Make a final check of each elevator operation, with Owner's personnel present, immediately before date of substantial completion. Determine that control systems and operating devices are functioning properly.

### **3.8 ELEVATOR SCHEDULE**

#### **A. Elevator Qty. 1**

1. Elevator Model: endura MRL Twinpost above-ground 3-stage.
2. Elevator Type: Hydraulic Passenger.
3. Rated Capacity: 2500 lbs.
4. Rated Speed: 80-110 ft./min.
5. Operation System: TAC32H.
6. Travel: 26'-0".
7. Landings: 2 total. Landings will be at Basement and Second Floor only.
8. Openings:
  - a. Front: 1
  - b. Rear: 1
9. Clear Car Inside: 6'-9" wide x 4'-5" deep.
10. Inside clear height: 7'-4" standard.
11. Door clear height: 7'-0" standard.
12. Hoistway Entrance Size: 3'-6" wide x 7'-0" high.
13. Door Type: One-speed Center opening.
14. Power Characteristics: 460 volts, 3 Phase, 60 Hz.
15. Seismic Requirements: Zone 0.
16. Hoistway Dimensions: 8'-8" wide x 6'-9" deep.
17. Pit Depth: 4'-0'.
18. Button & Fixture Style: Traditional Signal Fixtures.
19. Special Operations: None.

**END OF SECTION 142400**



**SECTION 144200**

**WHEELCHAIR LIFTS**

**PART 1 – GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

Furnish all labor, materials, equipment, and services required for complete operating wheelchair lifts.

**1.3 RELATED WORK SPECIFIED ELSEWHERE**

A. Well way and Pit:

1. Wall block outs for control and signal fixtures.
2. Structural supports for loads imposed by the lift.
3. Erection of witness box walls after lift is installed.
4. Wood casement door jambs and lift door panels prepared for electronic door strikes.
5. Latch bolt throw with mortise exit compatible with electronic strike, magnetic hold open devices, hinges, spring hinges, closer and door.
6. 4-1/4" pit required for each lift.

B. Electrical Service, Conductors and Devices:

1. GFCI convenience outlet in machine equipment space.
2. Guarded florescent light fixtures, minimum 2-feet long, maximum 4-feet long in machine equipment space designated by the Contracting Officer.
3. Single-phase mainline power feeders to terminals of each lift controller with protected, lockable "off" disconnect switch.
4. Temporary power and illumination to install test and adjust lift equipment.
5. Conduit runs from (designated by the Contracting Officer) to lift control stations, interlocks, magnetic hold open locations and under the lift table and into pump locations. Conduit size " \_ " minimum.

**1.4 DEFINITIONS**

A. Hydraulic wheelchair lifts are hereby defined to include systems in which lifts are hoisted directly or indirectly by action of a hydraulic plunger and cylinder, with other components of the work including fluid storage tank, pump, valves, lift platform, entrances, control systems, signal equipment, guide system, electrical wiring, and devices for operating, leveling, maintenance, and similar required performances and capabilities.

B. Terms used are defined in the latest edition of the Safety Code for

Elevators and Escalators, ASME A 18.1 any reference to Code in the technical sections shall mean A18.1.

## 1.5 SYSTEM PERFORMANCE REQUIREMENTS

- A. Lift requirements are as follows:
1. Speed: +10% of 8fps under any loading condition.
  2. Capacity: Safety lower, stop, and hold up to 125% of rated load of 500lbs.
  3. Stopping Accuracy: 1/8 –inch under any loading condition.
  4. Pressure: Design and factory test fluid system components for 13,780Kpa. Do not exceed operating pressure of 11,700Kpa.

## 1.6 SUBMITTALS

- A. Submit the following in accordance with Conditions of the Contract and Section 013300, Submittal Procedures.
- B. Product Data for each lift unit, indicating capacities, sizes, performances, operations, safety features, controls, finishes, and similar information. Indicate any variations from specified requirements.
- C. Shop Drawings shall include dimensioned drawings for each lift, showing plans, elevations, sections and large-scale details indicating service at each landing, coordination with building structure and relationships with other construction. Indicate any variations from specified requirements plus maximum dynamic and static loads imposed on building structure at points of support. Indicate access for lift machinery spaces.
- E. Fixture diagrams, cuts, and Shop Drawings.
- F. Samples of exposed finishes for signal equipment, 4-inch square samples.
- G. Samples of engraved and epoxy filled graphics, braille plates and mounting provisions. This material is to be coordinated with work provided by the signage contractor.
- H. Wiring diagrams detailing locations and wiring for power, signal and control systems and differentiating clearly between manufacturer-installed wiring and field-installed wiring. Indicate maximum and average power demands.
- I. Certificate and Permits: Provide Owner with Copies of all inspection, acceptance certificates and operating permits as required by governing authorities to allow, normal, unrestricted use of lifts.
- J. Calculations: Meet electrical requirements necessary to verify adequacy of electrical provisions.
- K. Maintenance Manuals: Bound manuals for hydraulic lift. Include operating and maintenance instruction, parts listings with sources indicated, recommended parts inventory listing, emergency instructions, and similar information.

## **1.7 QUALITY ASSURANCE**

- A. Installer Qualifications: Installer who has completed lift installation similar in material, design, and extent to that indicated for Project which have resulted in installations with a record of successful in service performance.
  
- D. Regulatory Requirements: All the work covered by these specifications is to be done in full accord with the current national, state and city codes, ordinances and elevator safety orders.

## **1.8 DELIVERY, STORAGE AND HANDLING**

- A. Deliver materials in manufacturer's original, unopened protective packaging.
  
- B. Store materials in original protective packaging, prevent soiling, physical damage, and wetting.
  
- C. Protect equipment and exposed finishes during transportation, erection, and construction again damage and stains.

## **1.9 DELIVERY, STORAGE AND HANDLING**

- A. Coordination: Coordinate lift work with work of other trades for proper time and sequence to avoid construction delays. Use benchmark, lines, and levels designated by Contractor to ensure dimensional coordination of the work.

## **1.10 WARRANTY**

- A. Provide manufacturer's warranty agreeing to replace, repair, or restore defective materials and workmanship of lift work during warranty period, with the exception of ordinary wear and tear, and unusual abuse or neglect. Ordinary wear and tear is not accepted if the lifts are maintained under a separate service contract. Warranty period shall commence upon completion and final acceptance of all lifts by the Owner and Architect. This warranty shall be in addition to, and not a limitation of, other rights the Owner may have against the General Contractor under the Contract Documents.
  
- B. Warranty period is 5 years starting on the date of Substantial Completion; Warranty does not cover unusable abuse or neglect.
  
- C. Provide coincidental product warranties where available for major components of lift work. Submit with maintenance manuals.

## **PART 2 – PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Other manufacturer's products of equal or greater quality than those specified in this Section may be used. Submit request for substitution approval before the bid in accordance with Section 012500 Substitution Procedures..
  
- B. Approved Manufacturers: T L Shield and Associates, Inc. 818/509-8228.

## **2.2 MATERIALS AND COMPONENTS**

- A. Steel:
  - 1. Sheet Steel: Stretcher-leveled, cold rolled, commercial quality carbon steel Class 1 complying with ASTM A366, mane finish.
  - 2. Structural Steel Shapes and Plates: ASTM A6, ASTM A36 and ASTM A08.
- B. Paint: All exposed metal work furnished under this Section, except as otherwise noted, shall be cleaned of oil, grease, scale and other foreign matter and factory paint 1 shop coat of manufacturer's standard rust-resistant primer and minimum 1 shop coat alkyd enamel.

## **2.3 MACHINE SPACE EQUIPMENT**

- A. Provide manufacturer's engineered wheelchair lift systems that fulfill the requirements of this Section. Where components are not otherwise indicated, provide standard components, furnished by manufacturer as included in standard engineered wheelchair lift systems and as required for a complete system.
  - 1. Arrange equipment in spaces shown on Drawings. Provide identifying number on each pump unit, controller, and disconnect switch, and provide means to install equipment in machine space. Comply with NEC, Article 110-16a, working clearances

## **2.4 WHEELCHAIR LIFT MACHINES AND EQUIPMENT**

- A. Hydraulic Machines and Lift Equipment:
  - 1. Provide manufacturer's standard indirect plunger-cylinder unit for each lift. With electric pump-tank-control system equipment.
  - 2. Pump Unit: Provide assembled unit consisting of high pressure positive-displacement pump, intermittent duty cycle, super torque induction motor, master-type control valves combining safety features, holding, direction, bypass, stopping and manual lowering functions, solenoid release valve, shut off valve, oil reservoir with protected-vent opening, oil gauge and outlet strainer, drip pan and connections all mounted on isolating pads. Enclose with removable ventilated sheet metal enclosure. Drip pan is to be removable without complete disassembly of pump unit enclosure.
- B. Controller:
  - 1. Frame: Securely mount all assemblies, power supplies, chassis switches, relay and other items on a substantial, self-supporting steel frame. Completely enclose equipment with covers and ventilation to prevent overheating.
  - 2. Switch and Relay Design: Direct-current type, magnet operated with contacts of design and material to insure maximum conductivity, long life and reliable operation without overheating or excessive wear, and provide a wiping action to prevent sticking due to fusion. Provide switches carrying highly inductive currents with arc deflectors or suppressors.
  - 3. Power Supplies: UL recognized, with short-circuit protection.
  - 4. Wiring: CSA labeled cooper wires for factory wiring. Neatly route all wiring interconnections and securely attach wiring connections to studs or terminals.
    - a. Permanently mark components (relays, fuses, PC board, etc.).

- b. Use stable capacitor or crystals as the time base for electronic time-delay devices.

C. Noise and Vibration Control:

1. To minimize noise and vibration in occupied areas, mechanically isolate lift equipment from the machine space, electrically isolate enclosure, and pump motor.
2. Limit noise level relating to elevator equipment and its operation to no more than 40kba.

D. Pressure Hose: Provide SAE 100 R2AT double wire braid hydraulic pressure hose, high-pressure connections and oil for the system. Provide size, type and hose recommended by manufacturer.

E. Inserts: Furnish required concrete inserts and similar anchorage devices for the installation of lift platform base, machinery, and other components of lift work.

F. Lift Cylinder: Provide twin lift cylinders of seamless steel pipe. Provide minimum 3-1/2" diameter cylinders with top-level bypass to limit deck travel. Design head to receive unit type packing. Design cylinder base to accept minimum 1-inch pivot pin. Provide with hydraulic velocity fuses mounted at base of cylinder.

G. Plunger: Polished seamless steel tubing or pipe with top accept minimum 1-inch pivot pin at connection to lift platform deck.

H. Lift Cylinder Support: Provide steel channels to support lift cylinders and transmit loads to building structure.

I. Normal and Final Terminal Stopping Devices: Provide limit switch rack with nylon cams and take-up reel. Provide with final limit to deactivate lift in event of normal control limit failure.

J. Electrical Wiring and Wiring Connections:

1. Conductors and Connections: Provide cooper throughout with individual wires coded and connections on identified studs or terminal blocks. Use no splices or similar connection in wiring except at terminal blocks, control cabinets, junction boxes, or conduits. Provide 10% spare conductors throughout. Run spare wires from list connection points to individual elevator controller in the machine space. Tag spares so they can be identified in the machine space.
2. Conduit, etc. Conduit size \_"minimum. Do not use flexible conduit exceeding 3-feet in length. Pit Stop Switch: Provide, as required, per Code.

## 2.5 LIFT EQUIPMENT

A. Lift Frame: Mounted, stationary style, welded or bolted, roller or formed steel channel construction. Provide steel scissor leg stabilizer assembly of one-piece construction with accurate alignment of all holes. Provide dual roller retainers with grease fittings on cylinder pivot points. Roller and pivot pins shall be minimum 1-inch ground and chrome steel 75,000 lbs. minimum yield. Provide fiber guide bushings with chrome clevis pin pivot points.

B. Deck: Provide deck unit constructed of minimum ¼-inch steel with

straight toe guards on each side.

- C. Finish Floor Covering: Carpet by others. Refer, as required, to Section 096813 Tile Carpeting.
- D. Lift Door Electrical Contact: Arrange so that lift cannot operate unless doors are closed and locked within tolerance allowed by Code.

## 2.6 CONTROL SYSTEMS

- A. Provide relay login based control system for lift as required to provide automatic operation for the type indicated.
- B. Two Stop Collective:
  - 1. Operate lift (with or without an attendant) from buttons located at each landing, and on the lift. Activation of a landing station or lift station for level, other than level at which lift is standing shall automatically start lift and cause it to proceed to the landing corresponding to registered lift call or landing call, provided all landing gates are in the closed and locked position.
  - 2. Slow down and stop lift automatically at landing corresponding to the registered call. As slow down is initiated for a call, automatically cancel the call and render the call button for that direction of travel ineffective.
  - 3. Sequence of Operation:
    - a. Witness Box lift shall be normally held and locked in the raised 15" position. Lift access gate panel shall be closed and locked, and gate panel at Judges bench shall be closed and locked. Prior to activation of the lift, when the lift is activated by lower landing call button, all gates shall be closed and locked with electric strikes before lift platform is lowered. When lift is in lowered position, access gate shall be unlocked. Any deviation from this sequence requires Owner's approval.
- C. Automatic Stopping Accuracy: Stop lift platform within 1/8-inch above or below the landing sill. Avoid over travel, as well as under travel, and maintain stopping accuracy regardless of load on lift or direction of travel.
- D. Motion Control: AC type with unit valve suitable for operation specified and capable of providing smooth, comfortable acceleration, retardation and stop. Limit the difference in speed between full load and no load to not more than +10% of the contract speed.

## 2.7 SIGNAL EQUIPMENT

- A. Provide signal equipment to comply with requirements indicated below.
- B. Provide constant pressure landing-call and car-call buttons.
- C. Except for buttons and illuminated signal elements, fabricated signal equipment with exposed surfaces of No. 4 stainless steel finish.
- D. Lift Control Station: Provide lift control station on inside face of wood Witness Stand partition with faceplate containing flush or raised call button for each landing served and other buttons, switches, and controls required for specified car

operation and control. Provide operating device symbols as required by Code. Mark other buttons and switches with manufacture's standard identification for required use or function.

1. Provide one wall mounted lift control station. Equip car control station with required keyed control switches and service controls.
2. Suitably identify floor buttons, and stop switch by raised and painted letters or symbols per ADA Standards for Accessible Design including braille, or as approved by Owner and Architect.
3. Locate operating controls as indicated on Drawings.
4. Provide 1/8-inch raised floor push buttons.
5. Provide stop switch with markings to show "run" and "stop" positions.

E. Landing Push-Button Station: Provide landing push-button station at each landing as shown on Drawings.

1. Provide 1 riser; locate adjacent to lift at locations shown on Drawings. Install stations with up and down control buttons centered at handicapped height, 40-inches above the floor.
2. Provide keyed on-off-bypass switch at lower landing. Provide on-off position button (or switch) to activate system. Provide bypass position to disable electric strike to allow lower door to be opened with lift in raised position for maintenance access. Key to be removable in "off" position.

## **2.8 ENTRANCE/DOOR HARDWARE**

- A. Door Strike: Provide 24 VDC Electric Strike with brushed stainless steel finish with minimum 1/2-inch latch bolt throw with mortise exit hardware, as approved by Owner and Architect, prevent movement of lift deck if lift door panel is not fully closed and latched.

## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- A. Prior to commencing lift installation, examine well-way, well-way openings, pits, and machine space as constructed; verify all critical dimensions and examine supporting structure and all other conditions under which lift work is to be installed.

### **3.2 INSTALLATION OF LIFT SYSTEM**

- A. Comply with manufacturer's instructions and recommendations for work required during installation, referenced codes and specifications.
- B. Welded Construction: provide welded connections for installation of lift work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of work parts. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation: Mount rotating and vibrating lift equipment and components on vibration absorption mounts, designed to effectively prevent transmission of vibrations to structure and machine space and thereby, eliminate

sources of structure – borne noise from lift system.

### **3.3 WORKMANSHIP**

- A. Perform work as specified with due care, including shoring, bracing, etc. Be responsible for damage, which may be caused by such work to any part or parts of existing structures. Perform patching in accordance with applicable technical sections of the specifications.
  - 1. Materials or items designated to be installed shall be as specified.
  - 2. Finish surfaces as specified. Clean surfaces of dirt, grease, loose paint, etc., before finishing.
- B. Lubrication: Lubricate operating parts of systems, as recommended by manufacturer.
- C. Alignment: Coordinate installation of lift door panels and entrance frames with Section 064023, Interior Architectural Millwork.
- D. Leveling Tolerance: 1/8-inch, up or down, regardless of load and direction of travel.
- E. Adjust motors, pumps, valves, controllers, leveling switches, limit switches, stopping switches, door strikes, etc., to achieve required performance levels.
- F. Fabricate and assemble various parts in shop to minimize field assembly. Assemble parts that require close field fit in the shop and mark for field erection.
- G. Equipment Installation: Install machine space equipment including lift, and motor control and with clearances in accordance with referenced codes and specifications upon completion of installation.
  - 1. Install items so that access for maintenance is safe and readily available.
  - 2. Install equipment to afford maximum safety and continuity of operation.

### **3.4 FIELD QUALITY CONTROL**

- A. Test and operate lift continuously between lowest and highest landings served, lifting full rate capacity load for a minimum period of 30 minutes. Readjust stops and other devices and signal equipment for accurate landings and operation of system after completion of test.

### **3.5 CLEANUP**

- A. Keep work areas orderly and free from debris during progress of project.  
  
Remove packaging materials on a daily basis as equipment is installed.

### **3.6 DEMONSTRATION**

- A. Instruct Owner in proper use, operation, and daily maintenance of lifts. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building



emergencies. Train Owner in normal procedures to be followed in checking for sources of operational failures or malfunction.

### 3.7 OPERATIONS AND MAINTENANCE MANUAL

- A. Submit complete sets of neatly bound written information necessary for proper maintenance and adjustment of equipment. Refer to the Owner and Architect for number of sets required. Printed information shall be furnished upon completion including table of contents and locator tabs. Information required as a minimum is as follows:
1. Straight-line wiring diagrams showing the electrical connections of all lift equipment in the wellway as well as the machine space. Mount one set on tempered hardboard panels with protective plastic covering, racked or similarly protected in each lift machine space.
  2. A legend sheet shall be furnished with each set of drawings containing the following information:
    - a. Name and symbol of each component.
    - b. Location on drawings, drawing sheet number and are of component.
    - c. Location of apparatus whether on controller, power unit, starter, wellway or lift platform.
  3. Bound instructions explaining all operating and safety features including but not limited to all apparatus in the car and lobby control panels, system operation, power unit, valve, pump, control, lift door equipment and fixtures.
  4. Lubrication charts indicating all lubricating points and type of lubricant recommended for all equipment.
  5. Parts catalogs for all replaceable parts including ordering forms and instructions.
  6. Adjuster's manual complete with adjustments settings, sequence of operation and other technical data required for adjustment, tuning, maintenance and operation of lifts.
  7. Three sets of keys to operate all keyed switches and locks shall be furnished upon completion. Keys shall be properly tagged. All keying shall be coordinated with the Owner.
  8. User instruction manual: Include access codes required for accessing microprocessor equipment for adjusting or programming.

**END OF SECTION 144200**

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