

Project Manual for

**CARROLL COUNTY  
BOARD OF COMMISSIONERS  
Carrollton, OH**

**211 MOODY AVE SW  
OFFICE RENOVATION**



PREPARED BY:

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Project No. 24013.000  
Issue Date: October 15, 2024

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**NOTICE TO BIDDERS**

Sealed bids on a stipulated-sum basis for:

**CARROLL COUNTY BOARD OF COMMISSIONERS  
CARROLL COUNTY OFFICE – OFFICE RENOVATION**

**211 Moody Ave, SW  
Carrollton, OH 44615**

Will be received at the office of the Carroll County Board of Commissioners, Suite 201, 119 S. Lisbon Street, Carrollton, OH 44615

on November 19, 2024 until 10:00 A.M. Local Time when the bids will be publicly opened and read aloud.

Bids received at any location other than the room specified above may not be considered at the discretion of the Owner and shall be returned to the bidder unopened if not considered.

Bids will be received for the following:

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	<u><b>ESTIMATE</b></u>
<b>A. Bid Package 1 – General Trades</b>	<b>\$3,970,750.00</b>

Bidding Documents for the proposed contract may be obtained by purchasing from SE Blueprint Inc., 2035 Hamilton Avenue, Cleveland, Ohio 44114, tel. 216.241.2250 between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday until deadline for submitting bids.

The Bidding Documents may be reviewed for bidding purposes without charge during normal business hours at the following locations:

<b>The Builder’s Exchange</b> 9555 Rockside Road, Suite 300 Valley View, Ohio 44125	<b>Phone: (216) 393-6300/(866) 907-6300</b> <b>Fax: (216) 393-6304/(866) 907-6304]</b>
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<b>University of Akron</b> <b>Builder’s Exchange of East Central Ohio</b> 495 Wolf Ledges Parkway Akron, Ohio 44311	<b>Phone: (330) 434-5165</b> <b>Fax: (330) 434-6088</b>
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<b>Builder’s Exchange of East Central Ohio</b> 5377 Lauby Road, Suite 202 North Canton, Ohio 44720	<b>Phone: (330) 452-8039</b> <b>Fax: (330) 452-4323</b>
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<b>Subcontractors Association of Northeast Ohio</b> 637 Vernon Odom Blvd. Akron, Ohio 44307	<b>Phone: (330) 762-9951</b> <b>Fax: (330) 762-9960</b>
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A Pre-Bid meeting will be held **October 29, 2024 at 9:00 a.m.** Local Time at the project site, 211 Moody Ave SW, Carrollton, OH 44615, to tour the site and discuss and review requirements of the Work.

Bids will be opened the November 19, 2024 at 10:00 a.m. at the office of the Carroll County Board of

Commissioners, Suite 201, 119 S. Lisbon Street, Carrollton, OH 44615

Each bid shall be accompanied by a bond executed by a surety company authorized to do business in Ohio, or by a certified check on a solvent bank, payable to Carroll County Board of Commissioners in a sum equal to ten percent (10 %) of the amount of the bid. The certified check or bond will be held as a guarantee that if the proposed bid is accepted, the bidder will enter into a contract for same.

Each bid shall contain the full name of every person and company interested in the same and must be sealed in an envelope and endorsed with the identification of the appropriate contract.

No Bidder may withdraw his bid within sixty (60) days after the actual date of the opening thereof.

The right is reserved to reject any and all bids.

By Order of **Carroll County Board of Commissioners**

Adv:	<b>October 16, 2024 and via website: <a href="https://carrollcountyohio.us/">https://carrollcountyohio.us/</a></b>
Pre-Bid Conference:	<b>October 29, 2024</b>
Bid Opening:	<b>November 19, 2024</b>



# AIA® Document A701® – 2018

## Instructions to Bidders

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

Carroll County Office  
211 Moody Avenue SW  
Carrollton, OH 44615

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

Carroll County Board of Commissioners  
119 S. Lisbon Street, Suite 201  
Carrollton, OH 44615

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

Hasenstab Architects, Inc.  
190 North Union Street, Suite 400  
Akron, OH 44304

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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.

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

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

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



## ARTICLE 1 DEFINITIONS

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

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

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

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

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

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

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

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

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

## ARTICLE 2 BIDDER'S REPRESENTATIONS

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

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

## ARTICLE 3 BIDDING DOCUMENTS

### § 3.1 Distribution

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

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

Refer to 001113 – Notice to Bidders

*(Paragraphs deleted)*

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

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

### § 3.2 Modification or Interpretation of Bidding Documents

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

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least five days prior to the date for receipt of Bids.

*(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)*

Email requests for clarification to Brandi Fry @ [brandif@hasenstabinc.com](mailto:brandif@hasenstabinc.com)

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

### § 3.3 Substitutions

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

#### § 3.3.2 Substitution Process

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

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

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

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

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

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

### § 3.4 Addenda

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

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

Addenda will be distributed in same manner as bid documents were distributed.

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

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

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

#### **ARTICLE 4 BIDDING PROCEDURES**

##### **§ 4.1 Preparation of Bids**

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

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

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

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

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

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

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

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

##### **§ 4.2 Bid Security**

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

As required by Section 004100 – Bid Guaranty and Contract Bond

§ 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.

*(Paragraph deleted)*

§ 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 60 days after the opening of Bids, withdraw its Bid and request the return of its bid security.

### § 4.3 Submission of Bids

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

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

Paper bids delivered in a sealed envelope, as described in 4.3.2.

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

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

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

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

### § 4.4 Modification or Withdrawal of Bid

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

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

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

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

The bid security will be returned to any Bidder who withdraws a bid upon request by the Bidder for security.

## ARTICLE 5 CONSIDERATION OF BIDS

### § 5.1 Opening of Bids

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

### § 5.2 Rejection of Bids

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

### § 5.3 Acceptance of Bid (Award)

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

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

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

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

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

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

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

### **§ 6.3 Submittals**

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

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

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

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

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

## **ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND**

### **§ 7.1 Bond Requirements**

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

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

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

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

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

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

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

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

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

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

**ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS**

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

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

.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

.5 Specifications

*(Table deleted)*

.6 Addenda:

*(Table deleted)*

.7

*(Paragraphs deleted)*

Other Exhibits:

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

.8 Other documents listed below:

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

SECTION 004100

BID FORM

**PROJECT IDENTIFICATION:** Carroll County Board of Commissioners  
Carroll County Office – Roof Repair & Replacement  
at 211 Moody Ave SW, Carrollton, OH 44615

**BID TO:** Carroll County Board of Commissioners  
119 S. Lisbon Street, Suite 201  
Carrollton, OH 44615

**BID FROM:**

\_\_\_\_\_  
(Firm Name)

\_\_\_\_\_  
(Business Address, line 1)

\_\_\_\_\_  
(Business Address, line 2)

**ITEM 1 – ACKNOWLEDGEMENTS**

---

1. The undersigned BIDDER agrees, if this Bid is accepted, to enter into an agreement with OWNER, in the form referenced in the Bidding Documents, to perform and furnish the Work as specified or indicated in the Bidding Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
  - a. This Bid will remain subject to acceptance for 60 days after the day of Bid opening;
  - b. The Owner has the right to reject this Bid;
  - c. BIDDER accepts the provisions of the Instructions and Supplementary Instructions to Bidders regarding disposition of Bid Security;
  - d. BIDDER will sign and submit the Agreement with applicable Bonds and other documents required by the Bidding Requirements within 15 days after the date of Owner's Notice of Award;
  - e. BIDDER has examined copies of all the Bidding Documents;
  - f. BIDDER has visited the site and become familiar with the general, local and site conditions;
  - g. BIDDER is familiar with federal, state and local laws and regulations;
  - h. BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Bidding Documents and additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
  - i. This Bid is genuine and not made in the interest of or on behalf of an undisclosed person, firm or corporation and is not submitted in conformity with an agreement or rules of a group, association, organization, or corporation; BIDDER has not directly or indirectly induced or solicited another BIDDER to submit a false or sham Bid; BIDDER has not solicited or induced a person, firm, or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself an advantage over another BIDDER or over OWNER;

**ITEM 2 – ADDENDA**

A. BIDDER has received the following Addenda receipt of which is hereby acknowledged.

Number	Date
_____	_____
_____	_____
_____	_____

**ITEM 3 – BIDS**

1. BIDDER will complete the Work in accordance with the Contract Documents for the following prices:

ALL LABOR AND MATERIALS, for the sum of:	\$
plus, applicable Allowances (Refer to Section 012100):	\$
plus, applicable cost for Performance / Payment Bond:	\$
<b>TOTAL (SUM):</b>	<b>\$</b>

Sum in Words: \_\_\_\_\_

**ITEM 4 – ALTERNATES**

**Alternate 1 – All work as shown in Room 171 – EOC, Room 172 – Waiting, Room 173 – Reception, Room 174 – Office, Room 175 Corridor, and Room 176 – Vestibule as indicated on construction documents under Alternate No. 1.**

Amount to be (added to) (deducted from) the BASE BID to complete all work for Alternate as described in specifications and on the Drawings.

Add: \$ \_\_\_\_\_, \_\_\_\_\_  
(in figures) (in words)

Deduct: \$ \_\_\_\_\_, \_\_\_\_\_  
(in figures) (in words)

**Alternate 2 – Provide fabric canopy at entrance to Waiting 121 as indicated on construction documents under Alternate No. 2.**

Amount to be (added to) (deducted from) the BASE BID to complete all work for Alternate as described in specifications and on the Drawings.

Add: \$ \_\_\_\_\_, \_\_\_\_\_  
(in figures) (in words)

Deduct: \$ \_\_\_\_\_, \_\_\_\_\_  
(in figures) (in words)



**Alternate 3 – Replacement of boiler plant as indicated on construction documents under Alternate No. 3.**

Amount to be (added to) (deducted from) the BASE BID to complete all work for Alternate as described in specifications and on the Drawings.

Add: \$ \_\_\_\_\_, \_\_\_\_\_  
(in figures) (in words)

Deduct: \$ \_\_\_\_\_, \_\_\_\_\_  
(in figures) (in words)

**ITEM 5 – TIME OF COMPLETION**

- A. BIDDER agrees that the Work will be substantially complete in accordance with the General Conditions within \_\_\_\_\_ calendar days from the Date of Commencement.

**ITEM 6 – ATTACHMENTS**

The following documents and items shall be attached to and made a condition of this Bid:

<b>A.</b>	<b>Qualification Questionnaire</b>	<b>Attached</b>	<b>Yes</b>	<b>No</b>
<b>B.</b>	<b>Bid Form (this document)</b>			
<b>C.</b>	<b>Affidavits</b>	<b>Attached</b>	<b>Yes</b>	<b>No</b>
<b>D.</b>	<b>Contractor Equal Employment Opportunity Certification</b>	<b>Attached</b>	<b>Yes</b>	<b>No</b>
<b>E.</b>	<b>Certification Regarding Debarment, Suspension, &amp; Other Responsibility Matters</b>			
		<b>Attached</b>	<b>Yes</b>	<b>No</b>
<b>F.</b>	<b>American Iron &amp; Steel Acknowledgement</b>	<b>Attached</b>	<b>Yes</b>	<b>No</b>
<b>G.</b>	<b>Bid Guaranty and Contract Bond</b>	<b>Attached</b>	<b>Yes</b>	<b>No</b>
<b>H.</b>	<b>Form HLS 0038</b>	<b>Attached</b>	<b>Yes</b>	<b>No</b>

SUBMITTED on \_\_\_\_\_  
\_\_\_\_\_, 20\_\_\_\_.

By \_\_\_\_\_  
(Firm Name)

\_\_\_\_\_  
(Name of Person Authorized to Sign)

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

Phone No.: \_\_\_\_\_

Bid Contact Information Name/E-mail Address: \_\_\_\_\_

The Bidder shall supplement the Bid by supplying the following information for use in preparation of the Contract:

**COMPANY** \_\_\_\_\_

**ADDRESS** \_\_\_\_\_

**CITY & STATE (ZIP)** \_\_\_\_\_

**FEDERAL TAX I.D. NO.** \_\_\_\_\_

**TELEPHONE** \_\_\_\_\_

**FACSIMILE NUMBER** \_\_\_\_\_

**E-MAIL ADDRESS** \_\_\_\_\_

**INCORPORATION LOCATION** \_\_\_\_\_

**TYPE OF BUSINESS:**  Corporation  Partnership  Sole Proprietorship  LLC

**AUTHORIZED REPRESENTATIVE** \_\_\_\_\_ **TITLE** \_\_\_\_\_

(please print or type)

**SIGNATURE** \_\_\_\_\_

**DATE** \_\_\_\_\_

END OF BID FORM

## QUALIFICATION QUESTIONNAIRE

***This form must be submitted with each bid in order for the bid to be deemed responsive. Pursuant to Ohio Revised Code §307.90, the Board may consider certain factors when analyzing bids for the awarding of projects. Pursuant to the law of the State of Ohio, the Board may determine that the lowest bid is not necessarily the best bid. Your sworn answers to these questions will provide the necessary information to be considered. No single factor will be controlling. The Board reserves the right to contact all firms and/or persons mentioned in this Questionnaire and to exercise its full discretion in determining the lowest and best bid.***

1. How many years has this company/bidder been in business? \_\_\_\_\_
2. Are you able to provide the appropriate bonds and liability insurance?  Yes  No
3. Is your company currently in bankruptcy?  Yes  No
4. Has your company ever sued or been sued by a public entity over a public project?  Yes  No  
If yes, explain: \_\_\_\_\_
5. In the past 5 years, have any performance bonds been activated against you?  Yes  No  
If yes, explain: \_\_\_\_\_
6. In the past 5 years, have you been cited for violations of unemployment laws?  Yes  No  
If yes, explain: \_\_\_\_\_
7. In the past 5 years, have you been cited for violations of workers compensation laws?  Yes  No  
If yes, explain: \_\_\_\_\_
8. In the past 5 years, have you been cited for violations of any prevailing wage laws?  Yes  No  
If yes, explain: \_\_\_\_\_
9. In the past 5 years, any citations for violation of Fair Labor Standards Act (FLSA)?  Yes  No  
If yes, explain: \_\_\_\_\_
10. In the past 5 years, have you been cited for violations of Occupational Safety and Health Administration (OSHA) regulations?  Yes  No  
If yes, explain: \_\_\_\_\_
11. Do you have adequate resources, including equipment and workers, to complete this project within the contract time?  Yes  No  
If no, explain: \_\_\_\_\_
12. In the past 5 years, has any lawsuit been brought against the company or its owners?  Yes  No  
If yes, explain: \_\_\_\_\_
13. Give at least one example of work completed similar in nature to that included in this project:  
\_\_\_\_\_  
\_\_\_\_\_

14. Give at least two references, including name, address, phone and contact person:

- a. \_\_\_\_\_
- b. \_\_\_\_\_

15. List all subcontractors expected to complete work on this project:

- a. Company: \_\_\_\_\_ Contact Person: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Email: \_\_\_\_\_
- b. Company: \_\_\_\_\_ Contact Person: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Email: \_\_\_\_\_
- c. Company: \_\_\_\_\_ Contact Person: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**CONTINUED ON NEXT PAGE**

## **AFFIDAVITS**

STATE OF OHIO:

COUNTY OF \_\_\_\_\_ SS:

Having provided a bid for the WPCLF/HSTS Project #2023-01, the undersigned, being first duly sworn, deposes and states as follows:

### **NON-DELINQUENCY OF PERSONAL PROPERTY TAXES**

1. At the time the bid was submitted, I/we [were] [were not] charged with any delinquent personal property taxes on the general tax list of personal property of Carroll County.
2. That the amount of due and unpaid delinquent tax is \$\_\_\_\_\_.
3. That the amount of due and unpaid penalties and interest is \$\_\_\_\_\_.

### **REAL ESTATE TAX DISCLOSURE**

1. At the time the bid was submitted, I/we [were] [were not] charged with any delinquent real estate taxes on any parcel of real estate within Carroll County.
2. That the amount of due and unpaid delinquent tax is \$\_\_\_\_\_.
3. That the amount of due and unpaid penalties and interest is \$\_\_\_\_\_.

### **NON-COLLUSION AFFIDAVIT**

The bid for the above project is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such bid is genuine and not collusive or sham; that said Bidder has not directly or indirectly induced or solicited any other Bidder to put in a fake or sham bid and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that any one shall refrain from bidding; that said Bidder has not in any manner directly or indirectly, sought by agreement, communication or conference with anyone to fix the bid price of said Bidder or of any other Bidder, or to fix any overhead, profit, or cost element of such bid price, or of that of any other Bidder, or to secure any advantage against the Owner awarding the contract or anyone interested in the proposed contract; that all statements contained in such bid are true; and, further, that said Bidder has not, directly or indirectly, submitted his bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith, to any corporation, partnership, company, association, organization, depository, or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or other financial interest with said Bidder in his general business.

### **ANTI-DISCRIMINATION STATEMENT**

In the hiring of employees for the performance of work under this contract or any subcontract hereunder, no contractor or subcontractor or any person acting on behalf of such contractor shall by reason of race, creed or color, or handicap, discriminate against any citizen of the State of Ohio in the employment of laborers or workers who qualify and who are available to perform the work to which this contract relates. No contractor, subcontractor or any person acting on my behalf shall in any manner discriminate against or intimidate any employee hired for the performance of work under this contract on account of race, creed or color, or handicap.

**MISCELLANEOUS**

In consideration of the award of the bid, the above statements are incorporated in said contract as a covenant of the undersigned.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name and Title

Sworn to before me and subscribed in my presence this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_  
Notary Public

**WARNING: MAKING A FALSE STATEMENT ON THIS AFFIDAVIT MAY BE PUNISHABLE BY FINE AND/OR IMPRISONMENT.**

## Contractor Equal Employment Opportunity Certification

During the performance of this contract, the undersigned agrees as follows:

1. The undersigned will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The undersigned will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The undersigned agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this equal opportunity (federally assisted construction) clause.
2. The undersigned will, in all solicitations or advertisements for employees placed by or on behalf of the undersigned, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.
3. The undersigned will send to each labor union or representative of workers, with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the undersigned's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The undersigned will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and the rules, regulations, and relevant orders of Secretary of Labor.
5. The undersigned will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and relevant orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency of the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the undersigned's non-compliance with the equal opportunity (federally assisted construction) clause of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part, and the undersigned may be declared ineligible for further Government contracts of federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No 11246 of September 24, 1965, or by rules, regulations, or order of the Secretary of Labor, or as provided by law.
7. The undersigned will include this equal opportunity (federally assisted construction) clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No 11246 of September 24, 1965, so that such provision will be binding upon each subcontract or vendor. The undersigned will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for non compliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor, as a result of such direction by the administering agency the undersigned may request the United States to enter into such litigation to protect the interest of the United States.

---

(Signature)

(Date)

---

(Name and Title of Signer, Please type or print)

---

(Firm Name)

### **Certification Regarding Debarment, Suspension, and Other Responsibility Matters**

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal of State antitrust statues or commission if embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (b) of this certification;
- (d) Have not within a three year period preceding this application / proposal had one or more public transactions (Federal, State, or local) terminated for cause or default; and
- (e) Will not utilize a subcontractor or supplier who is unable to certify (a) through (d) above.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

---

Type Name & Title of Authorized Representative

---

Signature of Authorized Representative

---

Date

I am unable to certify to the above statements. My explanation is attached.



## American Iron and Steel Acknowledgement

The Contractor acknowledges to and for the benefit of Carroll County ("Purchaser") and the State of Ohio (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

---

Signature

Date

---

Name and Title of Authorized Signatory, Please Print or Type

---

Bidder's Firm

Check here if the WPCLF or WSRLA applicant will be requesting an individual waiver for non- American made iron and steel products. Please note that the waiver box does not need to be marked for nationwide waivers.

**BID GUARANTY AND CONTRACT BOND**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, \_\_\_\_\_<sup>1</sup>and  
\_\_\_\_\_<sup>2</sup>

as Surety, are hereby held and firmly bound unto the Board of Commissioners of Carroll County, Ohio<sup>3</sup> hereinafter called the Obligee, in the penal sum of the dollar amount of the bid submitted by the Principal to the Obligee on \_\_\_\_\_ to undertake the project known as:

Carroll County Office – Asbestos Abatement and Removal of Universal Waste

The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Obligee, incorporating any additive or deductive alternative proposals made by the Principal on the date referred to above to the Obligee, which are accepted by the Obligee. In no case shall the penal sum exceed the amount of \_\_\_\_\_ DOLLARS (\$\_\_\_\_\_). If this item is left blank, the penal sum will be the full amount of the Principal's bid, including alternates. Alternatively, if completed, the amount stated must not be less than the full amount of the bid, including the alternatives in dollars and cents. A percentage is not acceptable.

For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that whereas the above-named Principal has submitted a bid on the above referred to project;

NOW, THEREFORE, if the Obligee accepts the bid of the Principal and the Principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the Principal pays to the Obligee the difference not to exceed ten percent of the penalty hereto between the amount specified in the bid and such larger amount or which the Obligee may in good faith contract with the next lower bidder to perform the work covered by the bid; or in the event the Obligee does not award the contact to the next lower bidder and resubmits the project for bidding, the Principal will pay the Obligee the difference, not to exceed ten percent of the penalty hereon between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect. If the Obligee accepts the bid of the Principal and the Principal within sixty (60) days after the awarding of the contract, enters into a proper contract in accordance with the bid, plans, details, specifications, and bills of material, which said contract is made a part of this bond the same as though set forth herein; and

<sup>1</sup>Here insert full name or legal title of Bidder and address

<sup>2</sup>Here insert full name or legal title of Surety

<sup>3</sup>Here insert full name or legal title of Owner

If the said Principal shall well and faithfully perform each and every condition of such contract; and indemnify the Obligee against all damage suffered by failure to perform such contract according to the provisions thereof and in accordance with the plans, details, specifications, and bills of material therefore; and shall pay all lawful claims of subcontractors, material men, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract: we agreeing and assenting that this undertaking shall be for benefit of any material man or laborer having a just claim, as well as for the Obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said Surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of said contract or in or to the plans and specifications therefore shall in any way affect the obligations of said Surety on this bond, and it does hereby waive notice of any such modifications, omissions or additions to the term of the contract or to the work or to the specifications.

SIGNED AND SEALED this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

PRINCIPAL

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

SURETY

By: \_\_\_\_\_  
Attorney-in-Fact

Surety Company Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Surety Agent's Name and Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*\*\*\*\* FOR INSTRUCTIONAL USE ONLY \*\*\*\*\*

## READ BEFORE COMPLETING YOUR DMA FORM

Forms not conforming to the specifications listed below or not submitted to the appropriate agency or office will not be processed.

- To complete this form, you will need a copy of the Terrorist Exclusion List for reference. The Terrorist Exclusion List can be found on the Ohio Homeland Security Web site at the following address:

<http://www.homelandsecurity.ohio.gov/dma.asp>

- Be sure you have the correct DMA form. If you are applying for a state issued license, permit, certification or registration, the "State Issued License" DMA form must be completed (HLS 0036). If you are applying for employment with a government entity, the "Public Employment" DMA form must be completed (HLS 0037). If you are obtaining a contract to conduct business with or receive funding from a government entity, the "Government Business and Funding Contracts" DMA form must be completed (HLS 0038). The Pre-certification form (HLS 0035) should only be completed if you are specifically instructed to do so by the agency or office requesting the form.
- Your DMA form is to be submitted to the issuing agency or entity. "Issuing agency or entity" means the government agency or office that has requested the form from you or the government agency or office to which you are applying for a license, employment or a business contract. For example, if you are seeking a business contract with the Ohio Department of Commerce's Division of Financial Institutions, then the form needs to be submitted to the Department of Commerce's Division of Financial Institutions. Do NOT send the form to the Ohio Department of Public Safety UNLESS you are seeking a license from or employment or business contract with one of its eight divisions listed below.
- Department of Public Safety Divisions:

Administration	Ohio Homeland Security*
Ohio Bureau of Motor Vehicles	Ohio Investigative Unit
Ohio Emergency Management Agency	Ohio Criminal Justice Services
Ohio Emergency Medical Services	Ohio State Highway Patrol
- \* DO NOT SEND THE FORM TO OHIO HOMELAND SECURITY UNLESS OTHERWISE DIRECTED. FORMS SENT TO THE WRONG AGENCY OR ENTITY WILL NOT BE PROCESSED.

\*\*\*\*\* FOR INSTRUCTIONAL USE ONLY \*\*\*\*\*



**GOVERNMENT BUSINESS AND FUNDING CONTRACTS**

In accordance with section 2909.33 of the Ohio Revised Code

**DECLARATION REGARDING MATERIAL ASSISTANCE/NO ASSISTANCE TO A TERRORIST ORGANIZATION**

This form serves as a declaration of the provision of material assistance to a terrorist organization or organization that supports terrorism as identified by the U.S. Department of State Terrorist Exclusion List (see the Ohio Homeland Security Division Web site for reference copy of the Terrorist Exclusion List).

Any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided. Failure to disclose the provision of material assistance to such an organization or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree.

For the purposes of this declaration, "material support or resources" means currency, payment instruments, other financial securities, funds, transfer of funds, and financial services that are in excess of one hundred dollars, as well as communications, lodging, training, safe houses, false documentation or identification, communications equipment, facilities, weapons, lethal substances, explosives, personnel, transportation, and other physical assets, except medicine or religious materials.

**COMPLETE THIS SECTION ONLY IF YOU ARE AN INDEPENDENT CONTRACTOR**

LAST NAME		FIRST NAME		MI
HOME ADDRESS				
CITY	STATE	ZIP	COUNTY	
HOME PHONE		WORK PHONE		

**COMPLETE THIS SECTION ONLY IF YOU ARE A COMPANY, BUSINESS OR ORGANIZATION**

LAST NAME		FIRST NAME		MI
BUSINESS/ORGANIZATION NAME			PHONE	
BUSINESS ADDRESS				
CITY	STATE	ZIP	COUNTY	

**DECLARATION**

In accordance with section 2909.32 (A)(2)(b) of the Ohio Revised Code

For each question, indicate either "yes," or "no" in the space provided. Responses must be truthful to the best of your knowledge.

- Are you a member of an organization on the U.S. Department of State Terrorist Exclusion List?  Yes  No
- Have you used any position of prominence you have with any country to persuade others to support an organization on the U.S. Department of State Terrorist Exclusion List?  Yes  No
- Have you knowingly solicited funds or other things of value for an organization on the U.S. Department of State Terrorist Exclusion List?  Yes  No
- Have you solicited any individual for membership in an organization on the U.S. Department of State Terrorist Exclusion List?  Yes  No
- Have you committed an act that you know, or reasonably should have known, affords "material support or resources" to an organization on the U.S. Department of State Terrorist Exclusion List?  Yes  No
- Have you hired or compensated a person you knew to be a member of an organization on the U.S. Department of State Terrorist Exclusion List, or a person you knew to be engaged in planning, assisting, or carrying out an act of terrorism?  Yes  No

In the event of a denial of a government contract or government funding due to a positive indication that material assistance has been provided to a terrorist organization, or an organization that supports terrorism as identified by the U.S. Department of State Terrorist Exclusion List, a review of the denial may be requested. The request must be sent to the Ohio Department of Public Safety's Division of Homeland Security. The request forms and instructions for filing can be found on the Ohio Homeland Security Division Web site.

**CERTIFICATION**

I hereby certify that the answers I have made to all of the questions on this declaration are true to the best of my knowledge. I understand that if this declaration is not completed in its entirety, it will not be processed and I will be automatically disqualified. I understand that I am responsible for the correctness of this declaration. I understand that failure to disclose the provision of material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List, or knowingly making false statements regarding material assistance to such an organization is a felony of the fifth degree. I understand that any answer of "yes" to any question, or the failure to answer "no" to any question on this declaration shall serve as a disclosure that material assistance to an organization identified on the U.S. Department of State Terrorist Exclusion List has been provided by myself or my organization. If I am signing this on behalf of a company, business or organization, I hereby acknowledge that I have the authority to make this certification on behalf of the company, business or organization referenced on page 1 of this declaration.

**X**

\_\_\_\_\_  
APPLICANT SIGNATURE

\_\_\_\_\_  
DATE

SECTION 004343

PREVAILING WAGE RATES

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. Contractor is required to comply with State of Ohio Prevailing Wage Rates in effect at the time of submitting bid form for the Project subject to and based on geographic location.
- B. State of Ohio Prevailing Wage rates are not bound into this Project Manual, but are to be treated as if they were. The Contractor is required to visit the State of Ohio – Division of Industrial Compliance, Department of Commerce to get the most current and correct Prevailing Wage rate information in order to submit a valid bid.
- C. The State of Ohio website address, for Prevailing Wage information, as of the date of publication of this Project Manual is;
  - 1. <http://com.ohio.gov/laws/>

PART 2 – PRODUCTS

Not Applicable

PART 3 – EXECUTION

Not Applicable

END OF SECTION

## **CONTRACTOR'S CERTIFICATION**

The Contractor certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an Owner, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan or cooperative agreement.
  
- (2) If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Owner, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the Contractor shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
  
- (3) The Contractor shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

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

The Contractor understands that this project is funded with State grant money. The Contractor shall not act or fail to act in any manner that would cause the county to lose funding for the project.

### **INTEREST OF LOCAL PUBLIC OFFICIALS**

No member of the governing body of the locality and no other officer, employee, agent or public official of such locality, who exercises any functions or responsibilities in connection with the planning and carrying out of the program, shall have any personal financial interest, direct or indirect, in this contract; and the Contractor shall take appropriate steps to assure compliance.

### **INTEREST OF CONTRACTOR AND EMPLOYEES**

The Contractor covenants that he presently has no interest and shall not acquire interest, direct or indirect, in the study area or any parcels therein or any other interest which would conflict in any manner or degree with the performance of his services hereunder. The Contractor further covenants that in the performance of this Contract, no person having any such interest shall be employed.



## **RECORDS AND AUDITS**

The Contractor shall maintain accounts and records, including personnel, property and financial records, adequate to identify and account for all costs pertaining to the contract and such other records as may be deemed necessary by the Owner to assure proper accounting for all project funds. These records will be made available for audit purposes to the Owner or any authorized representative, and will be retained for three years after the expiration of this contract unless permission to destroy them is granted by the Owner.

## **FEDERAL OR STATE OFFICIALS NOT TO BENEFIT**

No members of or delegate to the Congress of the United States of America, and no resident U.S. Commissioner, nor any officer or employee of the State of Ohio subject to Ohio Ethics Law (ORC Sec. 102.03(A)) will be admitted to any share or part hereof or to any benefit to arise herefrom.

## **REPORTING REQUIREMENTS**

The Contractor shall complete and submit all reports, in such form and according to such schedule, as may be required by the Owner.

## **PATENT RIGHTS**

- A. The Contractor shall hold and save the Owner and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract including its use by the Owner, unless otherwise specifically stipulated in the contract documents.
- B. License or Royalty Fees: License and/or Royalty Fees for the use of a process which is authorized by the Owner of the project must be reasonable, and paid to the holder of the patent, or his authorized license, direct by the Owner and not by or through the Contractor.
- C. If the Contractor uses any design device or materials covered by letters, patent or copyright, he shall provide for such use by suitable agreement with the owner of such patented or copy-righted design device or material. It is mutually agreed and understood, that without exception the contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his Sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented or copy-righted design, device or materials or any trademark or copy-right in connection with work agreed to be performed under this contract, and shall indemnify the Owner for any cost, expense, or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

### **COPYRIGHTS & RIGHTS IN DATA**

No materials, to include but not limited to reports, maps, or documents produced as a result of this contract, in whole or in part, shall be available to the Contractor for copyright purposes. Any such materials produced as a result of this contract that might be subject to copyright shall be the property of the Owner and all such rights shall belong to the Owner.

### **BREACH OF CONTRACT TERMS**

Any violation or breach of terms of this contract on the part of the Contractor or the Contractor's subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this contract. The duties and obligations imposed by the contract documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

### **PROVISIONS REQUIRED BY LAW DEEMED INSERTED**

Each and every provision of law and clause required by law to be inserted in this contract shall be deemed to be inserted herein and the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall forthwith be physically amended to make such insertion or correction.

### **TERMINATION FOR CONVENIENCE**

The Owner may terminate this contract at any time by giving at least ten (10) days notice in writing to the Contractor. If the contract is terminated by the Owner as provided herein, the Contractor will be paid for the time provided and expenses incurred up to the termination date.

### **ACCESS TO RECORDS**

The State of Ohio or any of their duly authorized representatives shall have access to any books, documents, papers and records of the Contractor which are directly pertinent to this specific contract, for the purpose of audits, examinations, and making excerpts and transcriptions.

### **OWNER REPORTING REQUIREMENTS**

The Contractor, at such times and in such forms as the Owner may require, shall furnish the Owner such periodic reports as it may request pertaining to the work or services undertaken pursuant to this Contract, the costs and obligations incurred or to be incurred in connection therewith, and any other matters covered by this Contract.

### **ENERGY EFFICIENCY**

The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Public Law 94-163).

**SPECIAL CONDITIONS PERTAINING TO HAZARDS SAFETY STANDARDS  
AND ACCIDENT PREVENTION**

**A. Lead-Based Paint Hazards**

(Applicable to contracts for construction or rehabilitation of residential structures)

The construction or rehabilitation of residential structures is subject to the HUD Lead-Based Paint regulations, 24 CFR Part 35. The Contractor and Subcontractors shall comply with the provisions for the elimination of lead-based paint hazards under sub-part B of said regulations. The Owner will be responsible for the inspections and certifications required under Section 35.14(f) thereof.

**B. Use of Explosives**

When the use of explosives is necessary for the prosecution of the work, the Contractor shall observe all local, state and Federal laws in purchasing and handling explosives. The Contractor shall take all necessary precautions to protect completed work, neighboring property, water lines, or other underground structures. Where there is danger to structures or property from blasting, the charges shall be reduced, and the material shall be covered with suitable timber, steel or rope mats.

The Contractor shall notify all owners of public utility property of intention to use explosives at least eight hours before blasting is done close to such property. Any supervision or direction of use of explosives by the Engineer does not in any way reduce the responsibility of the Contractor or his Surety for damages that may be caused by such use.

**C. Danger Signals and Safety Devices**

The Contractor shall make all necessary precautions to guard against damages to property and injury to persons. He shall put up and maintain in good condition, sufficient red or warning lights at night, suitable barricades and other devices necessary to protect the public. In case the Contractor fails or neglects to take such precautions, the Owner may have such lights and barricades installed and charge the cost of this work to the Contractor. Such action by the Owner does not relieve the Contractor of any liability incurred under these specifications or contract.

## SPECIAL EQUAL OPPORTUNITY PROVISIONS

### A. **Activities and Contracts Not Subject to Executive Order 11246, as Amended**

***(Applicable to Federally assisted construction contracts and related subcontracts \$10,000 and under)***

During the performance of this contract, the contractor agrees as follows:

1. The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants for employment are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.
2. The Contractor shall post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Owner setting forth the provisions of this non-discrimination clause. The Contractor shall state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. Contractors shall incorporate the foregoing requirements in all subcontracts.

### B. **Executive Order 11246 (Contracts/subcontracts above \$10,000)**

1. Section 202 Equal Opportunity Clauses

During the performance of this contract, the contractor agrees as follows:

- (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment, or recruitment advertising; layoff or termination, rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Owner setting forth the provisions of this non-discrimination clause.

- (2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration without regard to race, color, religion, sex, or national origin.
- (3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the Owner advising the said labor union or workers' representatives of the contractor's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (4) The contractor will comply with all provisions of Executive Order 11248 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his/her books, records, and accounts by the Ohio Department of Development's Office of Housing and Community Partnerships (OHCP), the U.S. Department of Labor and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and others.
- (6) In the event of the contractor's non-compliance with the non-discrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, or by rules, regulations or orders of the Secretary of Labor, or as otherwise provided by law.
- (7) The contractor will include the provisions of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the Department may direct as a means of enforcing such provisions, including sanctions for non-compliance. Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the Department, the contractor may request the United States to enter into such litigation to protect the interest of the United States.

2. Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246). (Applicable to contracts/subcontracts exceeding \$10,000)

- (1) The offerer's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth herein.
- (2) The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trace on all construction work in the covered area, are as follows:

<u>Goals for Minority Participation</u>	<u>Goals for Female Participation</u>
<u>6.9%</u>	<u>6.9%</u>

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered areas. The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goal established for the geographical area where the contract resulting from this solicitation is to be performed. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

**The Contractor shall provide written notification to the Manager of the Office of Housing and Community Partnerships, Ohio Department of Development, P.O. Box 1001, Columbus, Ohio 43266-0101 within ten (10) working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.**

As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is (insert description of the geographical areas where the contract is to be performed giving the state, county and city, if any): Carroll County

3. Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)

(1) As used in these specifications:

- a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;
- b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of labor, or any person to whom the Director delegates authority;
- c. "Employer Identification Number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;
- d. "Minority" includes:
  - (i) Black: all persons having origins in any of the Black African racial groups not of Hispanic origin;
  - (ii) Hispanic: all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race;
  - (iii) Asian and Pacific Islander: all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands; and
  - (iv) American Indian or Alaskan Native: all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification.

(2) Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

(3) If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either

individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor or Subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

- (4) The Contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. The Contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.
- (5) Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, nor the regulations promulgated pursuant thereto.
- (6) In order for the nonworking training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.
- (7) The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:



- a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.
- b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.
- c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with whatever additional actions the contractor may have taken.
- d. Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
- e. Develop on-the-job training opportunities and/or participate in training programs of the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under 7b above.
- f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations: by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper,

annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

- g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
- h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.
- i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the opening, screening procedures, and tests to be used in the selection process.
- j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.
- k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.
- l. Conduct, at least annually, an inventory and evaluation of least of all minority and female personnel for promotional opportunities and

encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

- m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.
- n. Ensure that all facilities and company activities are nonsegregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.
- o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.
- q. Covered construction contractors performing contracts in geographical areas where they do not have a federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the contract is being performed. Goals are published periodically in the Federal Register in notice form and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting offices.

- (8) Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through 7q). The efforts of a contractor association, joining contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7q of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation shall not be a defense for the Contractor's non-compliance.

- (9) A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of the Executive Order if a particular group is employed in a substantially desperate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).
- (10) The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
- (11) The Contractor shall not enter into any Subcontract with any person or firm debarred from Government Contracts pursuant to Executive Order 11246.
- (12) The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.
- (13) The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its effort to ensure equal employment opportunity. If the Contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall precede in accordance with 41 CFR 60-4.8.
- (14) The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by OHCP and to keep records. Records shall at least include for each employee, the name, address, telephone numbers, construction trade, union affiliation, if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

- (15) Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

**C. Certification of Nonsegregated Facilities (Over \$10,000)**

By the submission of this bid, the bidder, offerer, applicant or subcontractor certifies that he/she does not maintain or provide for his/her employees any segregated facility at any of his/her establishments, and that he/she does not permit employees to perform their services at any location, under his/her control, where segregated facilities are maintained. He/She certifies further that he/she will not maintain or provide for employees any segregated facilities at any of his/her establishments, and he/she will not maintain or provide for employees any segregated facilities at any of his/her establishments, and he/she will not permit employees to perform their services at any location under his/her control where segregated facilities are maintained. The bidder, offerer, applicant or subcontractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause of this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and wash rooms, restaurants and other eating areas, \*\*transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. He/She further agrees that (except where he/she has obtained identical certifications from proposed subcontractors for specific time periods) he/she will obtain identical certification from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt for the provision of the Equal Opportunity Clause; that he/she will retain such certifications in his/her files; and that he/she will forward the following notice to such proposed subcontractors (except where proposed subcontractors have submitted identical certifications for specific time periods).

\*\*Parking lots, drinking fountains, recreation or entertainment areas.

**D. Civil Rights Act of 1964**

Under Title VI of the Civil Rights Act of 1964, no person shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

**E. Section 109 of the Housing and Community Development Act of 1964**

- (a) No person in the United States shall on the grounds of race, color, national origin, or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under this title.

**F. "Section 3" Compliance in the Provision of Training, Employment and Business Opportunities**

- a. The work to be performed under this contract is on a project assisted under a program providing direct Federal financial assistance from the Department of Housing and Urban Development and is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u. [Section 3 requires that to the greatest extent feasible, opportunities for training and employment be given to lower income residents of the project area and contracts for work in connection with the project be awarded to business concerns which are located in, or owned in substantial part, by persons residing in the area of the project.]
- b. The parties of this contract will comply with the provisions of said Section 3 and the regulations issued pursuant thereto by the Secretary of Housing and Urban Development set forth in 24 CFR 135, and all applicable rules and orders of the Department issued thereunder prior to the execution of this contract. The parties to this contract certify and agree that they are under no contractual or other disability which would prevent them from complying with these requirements.
- c. The contractor will send to each labor organization or representative of workers with which he has a collective bargaining agreement or other contract or understanding, if any, a notice advising the said labor organization of workers' representative of his commitments under this Section 3 clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment or training.
- d. The contractor will include this Section 3 clause in every subcontract for work in connection with the project and will, at the direction of the applicant for recipient of Federal financial assistance, take appropriate action pursuant to the subcontract upon a finding that the subcontractor is in violation of regulations issued by the Secretary of Housing and Urban Development, 24 CFR Part 135. The contractor will not subcontract with any subcontractor where it has notice or knowledge that the latter has been found in violation of regulations under 24 CFR Part 135 and will not let any subcontract unless the subcontractor has first provided it with a preliminary statement of ability to comply with the requirements of those regulations.
- e. Compliance with the provisions of Section 3, the regulations set forth in 24 CFR Part 135, and all applicable rules and orders of the Department issued hereunder prior to the execution of the contract, shall be a condition of the Federal financial assistance provided to the project, binding upon the applicant or recipient for such assistance, its successors and assigns. Failure to fulfill these requirements shall subject the applicant or recipient, its contractors and subcontractors, its successors and assigns to those sanctions specified by the grant or loan agreement or contract through which Federal assistance is provided, and to such sanctions as are specified by 24 CFR Part 135.



# 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)*

Carroll County Board of Commissioners  
119 S. Lisbon Street, Suite 201  
Carrollton, OH 44615

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

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

Carroll County Office  
211 Moody Avenue SW  
Carrollton, OH 44615

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

Hasenstab Architects, Inc.  
190 North Union Street, Suite 400  
Akron, OH 44304

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.

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## TABLE OF ARTICLES

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

### EXHIBIT A INSURANCE AND BONDS

#### ARTICLE 1 THE CONTRACT DOCUMENTS

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

#### 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.

#### § 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 ( ) calendar days from the date of commencement of the Work.

[ ] By the following date:

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

**Portion of Work**

**Substantial Completion Date**

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

**ARTICLE 4 CONTRACT SUM**

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

**§ 4.2 Alternates**

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

**Item**

**Price**

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

**Item**

**Price**

**Conditions for Acceptance**

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

**Item**

**Price**

Allowance No. 1: Owner's use

\$50,000

Allowance No. 2: Panelboard and generator testing

\$30,000

§ 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.)*

§ 4.6 Other:

Init.

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

## **ARTICLE 5 PAYMENTS**

### **§ 5.1 Progress Payments**

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

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

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

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

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

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

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

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

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

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

### **§ 5.1.7 Retainage**

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

Init.

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*(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.)*

10% until completion of the Work.

§ 5.1.7.1.1 The following items are not subject to retainage:

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

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

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

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

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

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

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

## § 5.2 Final Payment

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

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

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

## § 5.3 Interest

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

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

0 % (Zero percent)

## 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.)*

Init.

**§ 6.2 Binding Dispute Resolution**

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

*(Check the appropriate box.)*

- Arbitration pursuant to Section 15.4 of AIA Document A201–2017
- Litigation in a court of competent jurisdiction
- Other *(Specify)*

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

**ARTICLE 7 TERMINATION OR SUSPENSION**

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

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

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

None

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

**ARTICLE 8 MISCELLANEOUS PROVISIONS**

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

**§ 8.2** The Owner’s representative:

*(Name, address, email address, and other information)*

Donald Leggett II  
Carroll County Board of Commissioners  
119 S. Lisbon Street, Suite 201  
Carrollton, OH 44615  
dleggett@carrollcountyohio.us

**§ 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
- .2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction

*(Paragraphs deleted)*

- .4 Drawings

Number	Title	Date
.5	Specifications	

Section	Title	Date	Pages
.6	Addenda, if any:		

Number	Date	Pages
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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.)*

*(Paragraphs deleted)*

- .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.)*

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

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

\_\_\_\_\_  
Donald Leggett II, Commissioner  
*(Printed name and title)*

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

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



# AIA® Document A101® – 2017 Exhibit A

## Insurance and Bonds

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

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

Carroll County Office  
211 Moody Avenue SW  
Carrollton, OH 44615

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

Carroll County Board of Commissioners  
119 S. Lisbon Street, Suite 201  
Carrollton, OH 44615

**THE CONTRACTOR:**  
(Name, legal status and address)

Hasenstab Architects, Inc.  
190 North Union Street, Suite 400  
Akron, OH 44304

### TABLE OF ARTICLES

- A.1 GENERAL**
- A.2 OWNER’S INSURANCE**
- A.3 CONTRACTOR’S INSURANCE AND BONDS**
- A.4 SPECIAL TERMS AND CONDITIONS**

#### ARTICLE A.1 GENERAL

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

#### ARTICLE A.2 OWNER’S INSURANCE

##### § A.2.1 General

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

#### ADDITIONS AND DELETIONS:

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

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

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

**§ A.2.2 Liability Insurance**

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

**§ A.2.3 Required Property Insurance**

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

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

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

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

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

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

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

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

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

**§ A.2.3.3 Insurance for Existing Structures**

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



**§ A.2.4 Optional Extended Property Insurance.**

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

*(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)*

- § A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.
  
- § A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.
  
- § A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.
  
- § A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.
  
- § A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.
  
- § A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.
  
- § A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

**§ A.2.5 Other Optional Insurance.**

The Owner shall purchase and maintain the insurance selected below.

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

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

§ A.2.5.2 **Other Insurance**  
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

### ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

#### § A.3.1 General

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

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

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

#### § A.3.2 Contractor's Required Insurance Coverage

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

#### § A.3.2.2 Commercial General Liability

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

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;

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

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

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

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than two million (\$ 2,000,000.00 ) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

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

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than two million (\$ 2,000,000.00 ) each accident, one million (\$ 1,000,000.00 ) each employee, and two million (\$ 2,000,000.00 ) policy limit.

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

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than one million (\$ 1,000,000.00 ) per claim and two million (\$ 2,000,000.00 ) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than one million (\$ 1,000,000.00 ) per claim and two million (\$ 2,000,000.00 ) in the aggregate.

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

*(Paragraphs deleted)*

**§ A.3.3 Contractor's Other Insurance Coverage**

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

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

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

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

§ A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:

*(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

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

§ A.3.3.2.3 **Asbestos Abatement Liability Insurance**, with policy limits of not less than one million (\$ 1,000,000.00 ) per claim and two million (\$ 2,000,000.00 ) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

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

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

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

**Coverage**

**Limits**

**§ A.3.4 Performance Bond and Payment Bond**

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

*(Specify type and penal sum of bonds.)*

Type	Penal Sum (\$0.00)
Payment Bond	
Performance Bond	

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

**ARTICLE A.4 SPECIAL TERMS AND CONDITIONS**

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



# AIA® Document A201® – 2017

## General Conditions of the Contract for Construction

### for the following PROJECT:

*(Name and location or address)*

Carroll County Office  
211 Moody Avenue SW  
Carrollton, OH 44615

### THE OWNER:

*(Name, legal status and address)*

Carroll County Board of Commissioners  
119 S. Lisbon Street, Suite 201  
Carrollton, OH 44615

### THE ARCHITECT:

*(Name, legal status and address)*

Hasenstab Architects, Inc.  
190 North Union Street, Suite 400  
Akron, OH 44304

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- 10 PROTECTION OF PERSONS AND PROPERTY
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- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS

### ADDITIONS AND DELETIONS:

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

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

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

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14 TERMINATION OR SUSPENSION OF THE CONTRACT

15 CLAIMS AND DISPUTES



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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

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

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

#### **§ 1.1.2 The Contract**

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

#### **§ 1.1.3 The Work**

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

#### **§ 1.1.4 The Project**

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

#### **§ 1.1.5 The Drawings**

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

#### **§ 1.1.6 The Specifications**

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

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

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

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

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

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

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

§ 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.

§ 1.2.1.2 Should conflict occur between the Contract Documents, the Contractor is deemed to have based the bid upon the more expensive method of performing the Work and may be required to perform the Work correspondingly.

§ 1.2.1.3 The Drawings show generally the location and arrangement of construction fixtures and are intended to depict the general intent of the Work in secure layout and liability of workmanship. They are not intended to show in detail all accessories and related Work necessary for the execution of the Work, but it is understood that such details are part of this Work.

§ 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.

§ 1.4.2 **The captions used in the Contract Documents are for convenience and reference only and in no way define, describe, extend, or limit the scope, meaning, or intent of the Contract Documents.**

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

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

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

### § 1.6 Notice

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

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



### **§ 1.7 Digital Data Use and Transmission**

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

**§ 1.7.1 The Contract Documents executed or identified in accordance with Subparagraph 1.1.1 shall prevail in case of any inconsistency with subsequent versions made through manipulatable electronics and/or digital operations.**

**§ 1.7.2 The Architect may, with the concurrence of the Owner, furnish to the Contractor digital versions of the Instruments of Services.**

**§ 1.7.3 All Contracts and Subcontracts for the Work shall be bound by the requirements stated in Section 1.7.**

### **§ 1.8 Building Information Models Use and Reliance**

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

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## § 2.6 NOTICE OF COMMENCEMENT

The Owner shall endeavor to record a Notice of Commencement with the county Recorder prior to the start of construction. This Notice of Commencement shall pertain to Work provided for this project only. The Owner shall post a copy of the Notice of Commencement in a conspicuous place on the construction site or provide a copy to the Contractor within ten (10) days after being requested to do so in writing by the Contractor.

## 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 and determined that the Work can be performed as required and completed within the timeframe allowed .

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

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

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

§ 3.2.5 The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for additional services for the Architect to evaluate and respond to Contractor's request for information or product substitutions where such information is readily ascertainable in the Contract Documents, Correspondence or Project's Documentation.

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

### § 3.3 Supervision and Construction Procedures

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

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

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

§ 3.3.4 If any of the Work must be inspected or approved by any public authority, the Contractor shall cause such inspection or approval to be performed. The Owner or the Architect's inspection or approval or failure to inspect or approve any portion of the Work shall not act as a waiver of the Contractor's obligations.

§ 3.3.5 Notwithstanding any other provision of the Contract Documents or the Owner's responsibilities defined in 2.3.4 to the contrary, the Contractor shall be responsible for locating (and shall locate prior to performing any Work) all above – and below – ground utilities on or about the site, and shall perform all work in such a manner so as to avoid damaging any such utilities. "Such utilities" includes, but is not limited to, service and transmission facilities for electricity, communication, water, sewer and gas.

### § 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.

§ 3.4.2.1 After the Contract has been executed, the Owner and Architect may consider timely requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 1 of the Specifications). The Architect will not consider substitutions as a remedy for the Contractors failure to submit, order or procure any product as specified in the Contract Documents with sufficient time to be incorporated into the work. By making requests for substitutions, the Contractor:

.1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified.

- .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified.
- .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
- .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 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.

§ 3.4.4 If the Owner or the Architect deems any employee of the Contractor or a Subcontractor unsatisfactory, the Contractor shall transfer or require its Subcontractor to transfer such employee from the Project immediately.

### § 3.5 Warranty

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

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

### § 3.6 Taxes

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

§ 3.6.1 When the Owner is a tax-exempt entity, materials purchased for incorporation into the Work are exempt from State and Use tax requirements. The Contractor shall comply with all laws pertaining to such tax exemption and shall be required to have exemption certificates signed by a representative of the Owner.

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

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

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

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

### § 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines

that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

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

### **§ 3.8 Allowances**

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

**§ 3.8.2** Unless otherwise provided in the Contract Documents,

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

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

### **§ 3.9 Superintendent**

**§ 3.9.1** The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site on a full time basis or on a regular, daily schedule acceptable to the Owner and Architect during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

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

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

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

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

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

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

§ 3.10.4 In no event shall the Owner's or Architect's review or approval of any schedule (a) impose on the Owner or Architect any responsibility for the progress, scheduling, sequencing, or timing of the Work, or (b) relieve the Contractor from full responsibility therefore as the Contractor is solely responsible for the preparation, accuracy, revision, and maintenance of its schedules.

§ 3.10.5 The Contractor shall furnish such employees, materials, facilities, and equipment and shall work such hours, including extra shifts, overtime operations, and Sundays, and holidays as may be necessary to ensure the prosecution and completion of the Work in accordance with the Contractor's Construction Schedule. If the Contractor does not perform the Work in accordance with the Contractor's Construction Schedule and it becomes apparent that the Work may not be completed within the contract Time, the Contractor shall, at no additional cost to the Owner, as necessary to improve its progress; (a) increase the number of employees in such crafts as will regain lost schedule progress; and (b) increase the number of working hours per shift, shifts per working day, working days per week, the amount of equipment or any combination of the foregoing measures to regain lost schedule progress.

§ 3.10.6 The Owner or Architect may require the Contractor to prepare and submit a recovery schedule demonstrating the Contractor's program and proposed plan to regain lost schedule progress and to ensure completion of the Work within the Contract Time. If the Owner or the Architect finds the proposed plan unacceptable, the Contractor shall be required to submit a new plan. If the actions taken by the Contractor or the second proposed plan are not satisfactory, the Owner or Architect may require the Contractor to take any of the actions set forth in Subparagraph 3.10.5.

### § 3.11 Documents and Samples at the Site

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

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

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

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

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

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

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

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

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

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

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

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

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify appropriate 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 appropriate performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

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

§ 3.12.11 The Architect's review of Contractor's submittals will be limited to examination of an initial submittal and two (2) resubmittals. The Architect's review of additional submittals will be made only with the consent of the Owner after notification by the Architect. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for evaluation of such additional resubmittals.



### § 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.

§ 3.13.1 The Contractor shall store and stage building materials and equipment (a) only as authorized or approved by the Owner; (b) so as not to create a hazard; and (c) properly protected at all times from the elements. The Contractor shall not use the site to store any materials or equipment, not immediately needed for the Work.

§ 3.13.2 The Contractor shall ensure free, unencumbered, and safe direct access to and from the properties neighboring the site for the owner's of such properties and their respective lessees, agents, invitees, and guests at all times during the performance of the Work. The Contractor shall be solely responsible for any damage to any such land or area to the Owner or occupant thereof or any land or areas contiguous thereto resulting from the performance of the Work.

### § 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.

§ 3.14.3 The Contractor is responsible for protecting its own work and shall not perform its work in a sequence which will unreasonably impede the work of other contractors or which will be damaged or removed in order for another contractor to complete its work.

### § 3.15 Cleaning Up

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

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

### § 3.16 Access to Work

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

§ 3.16.1 The Contractor shall provide the Owner, Architect, testing agencies, and governmental authorities with a jurisdictional interest in the Work with access to the Work in preparation and progress wherever located. The Contractor shall provide proper facilities for such access.

### § 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.

**§ 3.18.3** Contractor shall also indemnify and hold Owner and Architect and their consultants, agents and employees harmless from any claims, damages, injuries, or liability that directly or indirectly results from or arises out of the breach of this Agreement and/or the violation of any applicable law by Contractor, a Subcontractor, a Sub-subcontractor or anyone for whom any of the above are deemed to be responsible or liable. This provision is not intended in any way to limit the rights of the Owner or the Architect under the Section 3.18, but is intended to clarify that such indemnification rights will likewise arise out of a breach of contract or isolation of applicable law.

**§ 3.18.4** The Contractor shall cause the provisions of this paragraph 3.18 to be included, in every subcontract, regardless of tier, entered into the furtherance of the Work.

## **ARTICLE 4 ARCHITECT**

### **§ 4.1 General**

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

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

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

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

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

**§ 4.2.2.1** The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for additional site visits attributable to the fault, neglect or unnecessary request of the Contractor.

**§ 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.

**§ 4.2.4.1** The Architect, at their discretion, will utilize the Architect's Project Management Software for communications during the Project. This system is a web based data transfer tool which all contractors will be required to utilize for the transfer of information. This system will be utilized for Submittals, Requests for Information, Architect Supplemental Instructions, Change Orders, Construction Change Directives, Pay Applications and other communications required during Contract Administration.

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

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

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

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

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

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

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

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

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

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

## ARTICLE 5 SUBCONTRACTORS

### § 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site or to supply materials, equipment, or services in the furtherance of the work. 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 regardless of tier who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site or to supply materials, equipment, or services in the furtherance of the work. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

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

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

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

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

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

### § 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the

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

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

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

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

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

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

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

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

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

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

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

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

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

## § 6.2 Mutual Responsibility

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

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

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

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

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

## § 6.3 Owner's Right to Clean Up

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

## ARTICLE 7 CHANGES IN THE WORK

### § 7.1 General

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

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

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

### § 7.2 Change Orders

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

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

### § 7.3 Construction Change Directives

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

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

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

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

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

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

§ 7.3.5 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.

§ 7.3.11 In subparagraph 7.3.4, the allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the following schedule:

- .1 For the Contractor, for Work performed by the Contractor's own forces, 10 percent of the cost.
- .2 For the Contractor, for Work performed by the Contractor's subcontractor, 5 percent of the amount due the subcontractor.
- .3 Cost to which overhead and profit is to be applied shall be determined in accordance with subparagraph 7.3.4.
- .4 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and subcontract. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized.

#### § 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.

§ 7.4.1 If the Contractor reasonably believes that it would be entitled to an adjustment of the Contract Sum, Contract Time, or both, on account of an order for a minor change in the Work, the Contractor shall promptly give the Owner and Architect written notice of the Contractor's position, and not proceed with the subject Work without first receiving a Construction Change Directive or Change Order related to it. The Contractor's commencement of Work pursuant to an order for a minor change in the Work shall irrevocably signify the Contractor's that it is not entitled to an adjustment of the Contract Sum or Contract Time on account of such order.

### ARTICLE 8 TIME

#### § 8.1 Definitions

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

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

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

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

#### § 8.2 Progress and Completion

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

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

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

#### § 8.3 Delays and Extensions of Time

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



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

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

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

## **ARTICLE 9 PAYMENTS AND COMPLETION**

### **§ 9.1 Contract Sum**

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

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

### **§ 9.2 Schedule of Values**

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

§ 9.2.1 The schedule of values shall be completed using AIA Document G703, Certificate for Payment, Continuation Sheet.

### **§ 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**

Until Final Completion, the Owner shall withhold 10% for retainage and shall pay 90% of the amount due the Contractor on account of progress payments, minus such additional amounts as may be determined by Owner to be necessary for any unresolved claims or change orders. Upon Final Completion the retainage shall be released minus said amounts necessary to complete the work or to resolve claims.

§ 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.

**§ 9.3.2.1** If advance approval is obtained for payment for off-site stored materials, the Contractor must furnish the Owner the following:

- .1 A list of the materials consigned to the project (which shall be clearly identified), giving the place of storage, together with copies of invoices and reasons why materials cannot be delivered to the site.
- .2 Certification that all items have been tagged for delivery to the project and that they will not be used for any other purpose.
- .3 A letter from the Bonding Company indicating agreement to the arrangements and that payment to the contractor shall not relieve either party of their responsibility to complete the facility.
- .4 Evidence of adequate insurance covering the material in storage.
- .5 Evidence that representative of the Architect and/or Owner have visited the Contractor's place of storage and checked all items on the Contractor's Certificate. They shall certify, insofar as possible that the items are in agreement with the specifications and approve their incorporation into the project.
- .6 Any costs incurred by the Architect and/or Owner to inspect materials in off-site storage shall be paid by the Contractor.

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

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

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

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

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

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

discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

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

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

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

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

#### § 9.6 Progress Payments

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

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

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

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

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

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

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

liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

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

### **§ 9.7 Failure of Payment**

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

**§ 9.7.1** Contractor shall have no right to stop work for failure of payment by the Owner, for portions of the Work requested on the Application for Payment, if the Owner or Architect has notified the Contractor that the said portion of the Work is defective.

### **§ 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 and all occupancy or other permits have been issued in connection with the Work completed by Contractor. Unless otherwise agreed to by the Owner, substantial completion will not be granted until all closeout submittals and procedures, including but not limited to, all warranty documents, operation and maintenance manuals, and As-Built records have been provided to and accepted by the Owner.

**§ 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.

**§ 9.8.2.1** Except with the consent of the Owner, the Architect will perform no more than three (3) inspections to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for any additional inspections.

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

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

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

### **§ 9.9 Partial Occupancy or Use**

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

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

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

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

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

**§ 9.10.1.1** Except with the consent of the Owner, the Architect will perform no more than three (3) inspections to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for any additional inspections.

**§ 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 (7) a final lien waiver from the Contractor; (8) all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, record documents, and other documents required by the Contract Documents; and (9) all of the document and information required under Paragraph 9.3 to be included with Applications for Payment, and, (10), 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.

§ 9.10.2.1 Waiver of Liens shall be submitted to the Owner by the Contractor and all sub-contractors and material suppliers including, but not limited to those who have served a Notice of Furnishing to the Owners. If no Notice of Furnishing has been served in the time allotted then all lien rights will be forfeited as per State of Ohio law. At Owner's request Contractor will deliver to Owner such lien releases, waivers as the Owner may require in order to verify that all the Work is free of liens and all lien rights that may be claimed by any person or entity that has performed work or provided materials in connection with the Work.

§ 9.10.2.2 Owner may withhold from final payment one and one half times the cost or amount of unresolved liens and/or claims. If Contractor fails to obtain a release of mechanics lien or claim against the Owner by a subcontractor, materialmen, or lateness of Contractor or party claiming through such; Owner may upon 10 days notice pay such liens or claims without any responsibility for evaluating its validity and notwithstanding any assertion by the Contractor to the contrary, the Owner may assume the claim or lien to be valid. In any event, the Contractor shall indemnify and hold harmless the Owner from all expenses and loss (including reasonable attorney fees) arising out of or related to a lien or claim made by its subcontractors or materialmen.

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

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

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

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

## ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

### § 10.1 Safety Precautions and Programs

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

### § 10.2 Safety of Persons and Property

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

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

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

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

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

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

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

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

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

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

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

§ 10.2.8.1 Contractor shall indemnify and hold harmless the Owner from all expense and loss arising out of any failure to comply with the foregoing provisions and arising out of any injury to property or person, including death, where the Contractor, its subcontractor or its lower tiered subcontractors or materialmen violated any OSHA or other regulatory safety rules or procedures.

§ 10.2.8.2 The Contractor is required to promptly report in writing to the Owner all accidents whatsoever, arising out of or in connection with the performance of the Work, whether on or adjacent to the site, which cause death, personal injury or property damage, giving full details and statements of witnesses. Furthermore, if death or serious personal injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Owner.

§ 10.2.8.3 Precautions shall be exercised at all times for the protection of persons and property. The safety provisions of applicable building and construction codes shall be observed. Machinery, equipment and hazards shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction published by the Associated General Contractors of America, to the extent that such provisions are not inconsistent with applicable laws and regulations.

§ 10.2.8.4 The General Contractor shall provide, at the site, such equipment and medical facilities as are necessary to supply first aid service to anyone who may be injured in connection with the work.

§ 10.2.8.5 All work and materials shall be kept within the confines of the described property. During cold weather, the Contractor shall protect all work from damage. If low temperatures make it impossible to continue operations safely, in spite of cold weather precautions, the Contractor shall cease work and shall so notify the Owner. Any work damaged by failure to provide the protection required above shall be removed and replaced with new work at the Contractor's expense.

### **§ 10.3 Hazardous Materials and Substances**

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

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

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

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

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

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

#### **§ 10.3.7 Notice of Asbestos Hazard**

The Contractor shall be responsible for notifying and informing all personnel and tradesmen present on the job site (including those of the Subcontractors) of the presence of asbestos on this project. Areas where existing asbestos is known to still be present, has been removed or has been encapsulated or otherwise contained will be defined and denoted by the Owner's Representative. The contractor shall be responsible for procuring and installing OSHA approved signage relative to the asbestos hazard which shall remain posted during the duration of the project.

### **§ 10.4 Emergencies**

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



## ARTICLE 11 INSURANCE AND BONDS

### § 11.1 Contractor's Insurance and Bonds

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

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

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

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

### § 11.2 Owner's Insurance

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

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

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

### § 11.3 Waivers of Subrogation

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

*(Paragraph deleted)*

*(Paragraph deleted)*

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

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

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

### § 11.5 Adjustment and Settlement of Insured Loss

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

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

## ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

### § 12.1 Uncovering of Work

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

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such

Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

## **§ 12.2 Correction of Work**

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

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

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

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

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

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

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

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

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

## **§ 12.3 Acceptance of Nonconforming Work**

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

## **ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **§ 13.1 Governing Law**

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

## § 13.2 Successors and Assigns

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

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

## § 13.3 Rights and Remedies

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

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

## § 13.4 Tests and Inspections

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

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

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

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

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

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

## § 13.5 Interest

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

### § 13.6 ADVERTISING

The Contractor shall not place or allow its Subcontractors or Sub-subcontractors to place any advertising on the site without the Owner's prior written consent, which the Owner may withhold for any or no reason. Except as necessary to fulfill obligations under the contract Documents, the Contractor and its Subcontractors and Sub-subcontractors shall not advertise or publicize their engagement pursuant to the Contract or a subcontract or with respect to the Project except as the Owner may from time to time specifically authorize in writing subject to such limitations and requirements as the Owner may in its discretion impose with respect to the means or content of any such advertising or publicity.

### § 13.7 SKILLED LABOR

All labor shall be performed by skilled workers in a thorough, workmanlike manner, in conformity with the Contract Documents and established practices of the trade.

### § 13.8 MANUFACTURED PRODUCTS

The Contractor shall apply, install, connect, erect, use, clean, and condition all manufactured articles, materials, and equipment as directed in the manufacturer's latest printed instructions. The Contractor shall not use any manufactured articles, materials, or equipment for any purpose not recommended by the manufacturer. The Contractor shall bring to the Architect's attention any discrepancies between a specified use or procedure and the manufacturer's recommendations prior to installation.

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

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

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

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

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

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

### § 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

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

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

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

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

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

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

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

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

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

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

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

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

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

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

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

### ARTICLE 15 CLAIMS AND DISPUTES

#### § 15.1 Claims

##### § 15.1.1 Definition

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

### § 15.1.2 Time Limits on Claims

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

### § 15.1.3 Notice of Claims

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

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

### § 15.1.4 Continuing Contract Performance

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

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

### § 15.1.5 Claims for Additional Cost

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

### § 15.1.6 Claims for Additional Time

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

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

**§ 15.1.6.3** Claims for increase in the Contract Time shall be made promptly after occurrence of the condition purported to justify the increase. Failure to provide written notice of a request for an increase in the Contract Time within 10 days after the occurrence of the condition shall constitute a waiver of the right to request an increase. Claims for increase in the contract time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time Claimed as a consequence of each such cause of delay and the amount of any proposed adjustment to the Contract Price. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

**§ 15.1.6.4** The Contractor shall not be entitled to a separate increase in the Contract Time for each of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

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

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

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

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

### **§ 15.2 Initial Decision**

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

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

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

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



the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

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

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

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

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

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

### § 15.3 Mediation

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

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

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

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

### § 15.4 Arbitration

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

filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

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

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

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

**§ 15.4.4 Consolidation or Joinder**

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

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

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

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 PROJECT INFORMATION

- A. Contractor: The Project will be constructed under a single prime contract.
- B. Description of Work
  - 1. The Work includes but is not limited to complete alteration work to the upper (approx. 17,907 SF) and lower (approx. 8,809 SF) floors of the existing building located at 211 Moody Ave. The intent is to limit primary alteration work to the project areas as defined by the construction documents and to provide additional limited infrastructure improvements to areas outside the project area. There are no additions which modify the existing building area, occupancies, or uses. All new work performed shall comply with current building codes and regulations, however, the project intent is not to bring the entire structure into compliance with current building codes where no new work is being performed. Alteration work and improvements within the project area include, but shall not be limited to, the following systems: hvac, plumbing, fire alarm, normal power, data and communication, lighting, interior partitions, doors and hardware, and interior finishes.
  - 2. The Project will not be seeking LEED Accreditation.

1.3 WORK UNDER OTHER CONTRACTS

- A. Owner may award separate contracts for performance of certain operations at the project site. Those operations may be conducted simultaneously with work under this contract.
- B. Cooperate fully with separate contractors hired by the Owner, or performed by the Owner, so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.
  - 1. Asbestos Abatement: Owner is currently working through contracting process with Precision Environmental. Work will be completed prior to work commencing on this project. Refer to attached additional information regarding the asbestos abatement for reference.
  - 2. Roof Repair and Replacement: Work has been bid separately and work may be ongoing in conjunction with this project. All roof work associated with this project shall be completed to not void roof manufacturer's warranty. Roof drawings are included for reference.
  - 3. Teledata: The Owner will have separate contracts with teledata contractors. Pathways are to be provided under this contract.
  - 4. Security: The Owner will have separate contracts with security system contractors. Pathways are to be provided under this contract.

#### 1.4 OWNER-FURNISHED PRODUCTS

- A. Designated items may be furnished by the Owner and installed by the Contractor. The Work includes coordinating adjacent Work to receive Owner's equipment.
  - 1. Coordinate with Owner for delivery of Owner-furnished items according to Contractor's Construction Schedule.
  - 2. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner's inspection.
  - 3. Contractor shall review Shop Drawings, Product Data, and Samples noting discrepancies or anticipated problems in use of product.
  - 4. Contractor is responsible for receiving, unloading, and handling Owner-furnished items at Project site.
  - 5. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
  - 6. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.
  - 7. Contractor shall install and otherwise incorporate Owner-furnished items into the Work.
- B. Owner-Furnished Products:
  - 1. Refer to Specification Sections and Drawings for applicable items. Coordinate with Owner.

#### 1.5 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.
  - 1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
  - 2. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.
- B. 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. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
  - 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
    - a. 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

**02 26 23**

**Asbestos Assessment**

This section includes the Asbestos Hazard Assessment conducted at the former school-YMCA building by Emerald Environmental, Inc. and reported on March 6, 2024.

ACM materials at the former school-YMCA building are primarily mudded pipe fittings, mudded roof drains, boiler interior materials, window glazing compound, exterior caulking, hallway ramp tread, stainless steel sink undercoating, floor tile, floor tile mastic, limited areas of ceiling panels, limited areas of baseboard adhesive and chalk/bulletin board mastic.

Please see the attached report, located in appendix A of the project specifications for specific descriptions and locations.

FOR REFERENCE ONLY

Building Area	Material Description	Material Location	Material Quantity	Measurement Unit
1962 Orig. Bldg.	Mudded Pipe Fittings	On Pipe Fittings & Pipe Hangers In Limited Areas Throughout The Building, Primarily In Rooms 6,7, 9A, & In The E. Central Hallway On Fiberglass Insulation	15	EA
1962 Orig. Bldg.	9"x9" Floor Tile (Various Colors) & Associated Mastic	Limited Areas Throughout The Building (Limited Areas Under Glued Or Tacked Carpeting)	8,560	SF
1962 Orig. Bldg.	Chalk/Bulletin Board Mastic	Limited Areas Throughout The Building Associated With Chalk & Bulletin Boards	500	SF
1962 Orig. Bldg.	Boiler Interior Steel Plate Seaming Insulation	N. Central Mechanical Closet (Accessible At N. Exterior Of Building) Boiler is 3'x3'x3' Unit	1	EA
1962 Orig. Bldg.	Mirror Mastic	N. Central Rooms Areas Associated With Wall-Mounted Mirrors	900	SF
1967 NW Addition	Mudded Roof Drains & Associated Mudded Pipe Fittings	One Roof Drain & 2 Associated Large Mudded Pipe Fittings Located In Room 2 On Fiberglass Insulation	3	EA
1967 NW Addition	Stairtread & Adhesive	West Stairs To The West Exit (materials include the backing baseboards and side baseboarding)	48	SF
1967 NW Addition	9"x9" Floor tile (Tan) & Associated Mastic & Mastic Associated With Carpeting & Non-ACM 12"x12" Floor Tile	9"x9" Floor Tile & Associated Mastic Under Glued Carpeting in Offie 1 & Under Tacked Carpeting In The Conference Room; Floor Tile Mastic Associated With Non-ACM 12"x12" Floor Tile Throughout The Building, located under tacked and glued carpeting in limited areas; And Carpet Adhesive & Associated Black Floor Tile Mastic In Room 8A (note: Total ACM Materials are as follows: 800 SF ACM Floor Tile; 1,080 SF Carpet Adhesive Bound With Floor Tile Mastic; and 4,100 SF Of Floor Tile Mastic. A Total Of 4,100 SF Of ACM Flooring Materials Is Used For All Materials Floor Space The ACM Covers)	4,100	SF
1967 NW Addition	Chalk/Bulletin Board Mastic (Trace <1% Asbestos)	Limited Areas Throughout The Building Associated With Chalk & Bulletin Boards	600	SF
1967 NW Addition	Baseboard Adhesive (Associated With Baseboard (Black) Only	Limited Areas Throughout The Building	30	SF
1967 NW Addition	Stainless Steel Sink Undercoating (White)	Kitchen Sink	1	EA
1971 Pool/MP Room Addition	2'x2' & 2'x4' Ceiling Panel (Hole & Pinhole W/ Texture Look)	Rooms N. & S. Of The Multipurpose Room Stage & Throughout The Mechanical Mezzanine	500	SF
1971 Pool/MP Room Addition	9"x9" Floor Tile (Various Colors) & Associated Mastic	Throughout The Multipurpose Room, Stage, Adjacent Storage Rooms, Hallways & Connecting Corridors	3,160	SF
1971 Pool/MP Room Addition	Stairtread	Multipurpose Room Stage Area & Staircase To The Mechanical Mezzanine (material includes the backing baseboards and side baseboarding)	400	SF

Building Area	Material Description	Material Location	Material Quantity	Measurement Unit
1971 Pool/MP Room Addition	Baseboard Adhesive (Associated With Baseboard (Black) Only (Trace <1% Asbestos)	Limited Areas Throughout The Building, Primarily In The Multipurpose Room	100	SF
1970's S. Central Addition	Mudded Pipe Fittings	Limited Areas Throughout The Building On Fiberglass Insulation	10	EA
1970's S. Central Addition	Mudded Roof Drains & Associated Mudded Pipe Fittings	2 Roof Drains & 4 Associated Large Mudded Pipe Fittings Located Throughout The Building	6	EA
1970's S. Central Addition	9"x9" & 12"x12" Floor Tile (Multiple Colors)	Throughout Room 18	740	SF
1970's S. Central Addition	Floor Tile Mastic	Associated With ACM Floor Tile In Room 18 & Under Limited Areas Of Gued Carpeting & Non-ACM Floor Tile Throughout The Buiding In All Areas With Floor Tile; And Under Multiple Layers Of Non-ACM Floor Tile In Room 16	3,600	SF
1970's S. Central Addition	Hallway Ramp Tread	Main Hallway	120	SF
1970's S. Central Addition	Chalk/Bulletin Board Mastic (Trace <1% Asbestos)	Limited Areas Throughout The Building	100	SF
1981 Gym Addition	Mudded Pipe Fittings	Limited Areas Throughout The Building, Priamaily In The Lower Level Boiler Room Area And In The Upper Level West Mechanical Mezzanine Off Of The Gym	40	EA
1981 Gym Addition	Floor Tile Mastic	Limited Areas Throughout The Building, Primarily In The Upper Level Locker Room Entrances, Upper Level Southern Areas, SE Staircase Base & Limited Areas Throughout The Lower Level	3,180	SF
1981 Gym Addition	Stainless Steel Sink Undercoating (Gold)	Lower Level Kitchen Sink Station & Dishwashing Station Areas On Stainless Steel Counters & Sink Basins	140	SF
1981 Gym Addition	Boiler Interior Steel Plate Seaming Insulation & Refractory Cement	Lower Level South Mechanical Room Inside Of 2 Boiler Units (5'x6'x5' each) On The Interior Steel Plate Seaming	30	SF



## 02 82 11.16

### Scope of the Work – Asbestos Abatement

#### 2. Project Notes

##### Renovations:

- a) Creating openings in the exterior of the building is prohibited as the project is a pre-renovation project.
- b) Asbestos waste will not be allowed to accumulate on site.
- c) All generated demolition debris shall be disposed of as non-ACM common demolition debris. Contractor shall be responsible for dust suppression during the course of the demolition and shall maintain the hallways and all adjacent areas in a clean and dust-free condition. Contractor shall be responsible for damage to all walls, surfaces, desks, lab tables, appurtenances, etc. within the demolition work areas. Contractor shall take such steps as are deemed necessary to prevent any damage within the subject rooms.
- d) Contractor is to utilize caution and careful removal practices when removing ACM ceiling panels while maintaining and leaving the grid in an intact position. Contractor is responsible for any damage to lay-in ceiling panel grid system including associated light fixtures. Any damage will be repaired by the contractor to the building owners satisfaction without any additional cost to the building owner.
- e) Special care shall be taken to protect the block walls while abating wall mastics such as chalkboard & bulletin board mastic, mirror mastic and baseboard mastic. The mastic must all be removed without leaving permanent damage to the block walls. Permanent damage includes any indentations in the block or breakage to the block. At the completion of the removal of the mastics on the walls, the block shall have a clean, smooth surface that is flush with the block walls themselves. Any damage will be repaired by the contractor to the building owners satisfaction without any additional cost to the building owner.
- f) Special care shall be taken to protect the countertop and cabinetry when removing the stainless steel sink in the 1967 building kitchen. The countertop and cabinetry must remain intact and undamaged. Any damage will be repaired by the contractor to the building owners satisfaction without any additional cost to the building owner. Upon completion of the removal of the sink, the supply line valves shall be capped with removable caps. If any water is leaking from the valves while the valves are closed, the contractor shall cap the supply lines past the valves with a removable cap.
- g) Any electrical tie-in must be approved by the owner with any related electrical work being done by a licensed electrician.
- h) The contractor is to inspect above all lay-in ceiling panel ceilings for mudded fittings and or/mudded roof drains and verify all quantities with the owners on site representative prior to removal. The contractor will be reimbursed for removal and disposal for any additional fitting over the quantities that are included in the base bid including roof drains. The contractor will not be reimbursed if the quantities are not first verified prior to removal. See Mudded pipe fittings on fiberglass pipe insulation section below for additional detail.
- i) The contractor is responsible for all demolition at approximately (30) locations required to provide access through walls at all points where pipes penetrate wall and ceiling to allow access for inspection to determine if there is any concealed asbestos pipe insulation, mudded fittings ONLY in the areas of the building slated for wall demolition for renovation purposes (refer to renovation plans in appendix A for further detail on locations). No exploratory demolition work will take place in the building outside of the renovation areas slated for wall demolition work.

## 02 82 11.16

### Scope of the Work – Asbestos Abatement

- j) If in the process of accessing concealed asbestos containing materials the contractor causes previously non-regulated asbestos containing materials (based on standard demolition practices) to become a regulated material, then the contractor will be responsible for all associated cost, incurred to properly abate, package and dispose of these previously un-regulated asbestos containing materials.
- k) The abatement contractor, at the conclusion of the abatement project, will NOT close out their notifications. Instead, the notifications will be placed “on hold” until the completion of the renovation activity. This is to allow for removal of any additional materials that may be identified during the renovation. Once the renovation has been completed, the abatement contractor may close out the notification.

#### Mudded Pipe Fittings/Roof Drains on Fiberglass Pipe Insulation

- a) All mudded pipe fittings and roof drains associated with fiberglass pipe insulation will be abated throughout the building. Some mudded fittings and/or roof drains may be located above lay-in ceilings. The contractor is responsible for locating any mudded pipe fittings with subsequent removal of mudded pipe fittings located above lay-in ceilings. The contractor is responsible for the clean up of any loose asbestos debris that may be encountered above the ceilings. The contractor shall inspect the areas outside of the renovation scope of work areas for mudded pipe fittings with subsequent removal of the fittings while not creating damage to the ceiling panels, or the grid system. Post mudded fitting/mudded roof drain removal and inspection by the owners representative, the contractor shall return the ceiling panels back into the grid system undamaged. Contractor is responsible for any damage to lay-in ceiling panel grid system and ceiling panels including associated light fixtures Any damage will be repaired by the contractor to the building owners satisfaction with out any additional cost to the building owner.
- b) In all locations where mudded pipe fittings and mudded roof drains are abated, the contractor shall leave a clean straight cut-line in the fiberglass pipe insulation; as the uninsulated pipes will later be re-insulated by others.

#### Floor Tile / Non-Friable Materials

- a) The contractor is to remove and dispose of all 12”x12” and 9”x9” floor tile identified as asbestos throughout the building. It is assumed that floor leveler will be encountered during the floor tile and mastic removal installed over ACM mastic. The contractor is to remove all of the floor leveler material whether it is asbestos or non-asbestos and the underlying ACM mastic, leaving a clean and smooth concrete floor.
- b) Contractor is responsible for any and all demolition of cabinetry, benches and other furniture as necessary to inspect, access and remove floor tile and mastic beneath the cabinetry, benches or furniture in the renovation project areas of the building. Any floor tile and mastic located beneath cabinetry outside of the renovation project area will need the owners guidance prior to removal to determine if the cabinetry shall be removed by the abatement contractor and disposed of as C&D followed by the abatement of the floor tile and mastic. The cost associated with any such removal and disposal of C&D cabinetry and the removal of the ACM floor tile/mastic is included in the base bid.
- c) Floor tile may be present under carpet or other floor tile. Multiple layers of floor tile may be found. Contractor is responsible for any demolition necessary to access and remove all floor tile.

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### Scope of the Work – Asbestos Abatement

- d) All ACM floor tile and floor tile mastic removal will take place in negative pressure regulated work areas. The removal contractor shall place critical seals over all windows, HVAC vents, doorways, etc., and shall place at least one AFD (air filtration device) within each room prior to commencing removal. All removal technicians shall wear respiratory protection and disposable coveralls during the entire floor tile and floor tile mastic removal process. All mastic shall be removed using low-odor removal solvents or other methods provided the method is approved by the owners representative prior to commencement of removal. The use of volatile solvents, such as gasoline, kerosene, etc., is strictly prohibited. Prior to any mastic removal, all walls will be protected with poly splash guards. All generated waste shall be properly bagged, labeled and disposed of as asbestos containing material. Clearance sampling for floor tile and floor tile mastic removal work areas shall consist of PCM samples that will be prepared and read on-site.
- e) The contractor is to remove all baseboards from all rooms where floor tile is being removed.

#### Utilities

- a) Contractor shall be responsible for all cost associated with providing temporary electrical service and distribution cost for this project. At the completion the contractor shall disconnect and remove temporary electrical service.
- b) If the contractor requires additional electrical services any cost associated with securing these services and distribution cost will be at the asbestos abatement contractors own expense.
- c) Contractor shall be responsible for all required electrical lock-out and tag-out. Contractor shall coordinate with the appropriate building owner personnel in order to achieve proper electrical lock-out and tag-out prior to commencement of activities involving light fixture removal.
- d) Contractor shall be responsible for all cost associated with providing temporary water service and distribution cost for this project. At the completion the contractor shall disconnect and remove temporary water service.
- e) Contractor shall provide temporary lighting, as necessary, to adequately illuminate all work areas during the course of the project.

#### Miscellaneous Materials

- a) Sinks with identified asbestos undercoating are to be disposed of as asbestos containing waste.

#### Fixtures & Mercury

- a) If any mercury-containing switches, thermostats or other equipment are encountered during asbestos abatement activities, owner's representative is to be immediately notified to arrange removal and proper recycle/disposal of mercury-containing equipment.

#### General Comments

- a) Smoking will not be permitted within the building enclosure.
- b) Wherever HEPA exhaust is ducted through windows or doors, the window or door is to be fitted with a mechanically fastened plywood sheet with a cut-out for the exhaust

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### Scope of the Work – Asbestos Abatement

duct. Use of just poly to seal the window around the duct is not permitted. No windows or doors are slated for removal during the renovation project; windows and doors are to remain undamaged during the HEPA exhausting process. Any damage will be repaired by the contractor to the building owners satisfaction without any additional cost to the building owner.

- c) The use of opaque post-abatement lock down encapsulants, such as paint, adhesives, etc. will not be allowed. Lock down encapsulants, if used, shall be industry standard translucent and/or clear-drying encapsulants, specifically designed for use after asbestos removal. Contractor shall provide Associate with product information on any proposed encapsulant(s) for review and acceptance prior to application.
- d) All hazardous waste shipment manifest, bill of lading, asbestos waste shipment records (WSR) are to be reviewed by the owners representative prior to shipment of all waste off site.
- e) The contractor will be reimbursed for all unit price items only if the on site owner's representative and the contractor's supervisor agree to the actual quantities of materials to be removed prior to the removal. The contractor will not be reimbursed for any concealed materials removed that have not been verified by the owner's representative prior to their removal.
- f) UNIT COSTS: The project Bid Form requests that the contractor provide an add/deduct alternate unit cost for the removal of pipe fitting insulation, floor tile and mastic, etc. The unit costs will apply to concealed materials only and that are in excess of the quantities stated within. Also provide a unit cost for mobilization in the event of additional abatement work is found during renovation, outside the current scope of work. Mirror mastic is assumed to contain asbestos. The contractor shall enter a deduct price in the bid form for mirror mastic removal if the building owner determines to have the owners representative sample the material and remove from the scope of work if found to not contain asbestos. The removal and disposal of 2 package boilers with ACM seaming insulation and refractory cement in the 1981 Building is included in the base bid. The contractor shall enter a deduct price in the bid form for the removal of the 2 package boilers if the building owner determines to remove the boilers from the scope of work.
- g) The project work areas shall be available to the contractor Monday-Friday from 7:00AM-5:00PM, during daylight hours. The contractor shall schedule and perform the work in any daily 8-hour shift within that timeframe; not to exceed (5) 8-hour shifts a week. Weekend work will only be allowed if deemed necessary by the Owner and/or the Associate.
- h) Clearance testing for all removal activities shall consist of (PCM) sampling in accordance with established AHERA protocols, at the Owner's discretion, depending on the quantities within the individual work areas.

#### B. ASBESTOS CONTAINING MATERIALS

1. The work of these specifications involves activities that will disturb asbestos containing materials (ACM) or presumed asbestos containing materials (PACM). The location and type of ACM known to be present at the work site is set forth herein. If any other ACM or PACM is found, immediately notify the owner, other employers and employees regarding the location and quantity of the ACM or PACM.

#### C. ASBESTOS HEALTH RISK

## 02 82 11.16

### Scope of the Work – Asbestos Abatement

1. The disturbance or dislocation of ACM may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health risk to workers and building occupants. Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the risk and of proper work procedures which must be followed.
2. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb, or otherwise function in the immediate vicinity of any identified ACM, take appropriate continuous measures as necessary to protect all building occupants from the risk of exposure to airborne asbestos. Such measures shall include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

#### D. CONTRACTOR USE OF PREMISES

1. Use of the Site: Limit use of the premises to work in areas indicated. Do not disturb portions of the site beyond the areas in which the work is indicated.
  - a) Owner Occupancy: Allow for owner occupancy and use.
  - b) Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the owner, the owner's employees, and emergency vehicles at all time. Do not use these areas for parking or storage of materials. Schedule removal of debris as well as deliveries in agreement/coordination with the owner's use of the site and occupants.
2. Use of the Building: Maintain the building in a weather tight condition throughout the construction period. Repair of damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

#### E. OCCUPANCY REQUIREMENTS

1. Partial Owner Occupancy: The owner may occupy the site during the abatement. Cooperation with the owner during demolition operations to minimize conflicts and facilitate owner usage. Perform the work so as not to interfere with owner's operations.

#### F. AIR MONITORING

1. The owner has arranged for air monitoring to be performed throughout the entire project. Per the allowance section of the project specifications, Emerald Environmental will be the third party air monitoring consulting firm. The Abatement Contractor shall subcontract Emerald Environmental Services for payment purposes only. The building owner has approved the Abatement Contractor's utilization of Emerald Environmental for this project. Abatement Contractor understands and agrees that Emerald Environmental shall report directly to the building owner and that Abatement Contractor shall not direct and/or control Emerald Environmental. Nothing contained herein shall prevent Emerald Environmental from performing its services, including but not limited to the ability of Emerald Environmental to stop the work of the abatement contractor

## 02 82 11.16

### Scope of the Work – Asbestos Abatement

performing asbestos abatement work, for the benefit of the building owner. The allowance, however, will only pay for 35 shifts (of no more than 8 hours per day) for air monitoring services. As such the contractor is responsible for the reimbursement to the owner's air monitoring firm for all time expended beyond the 8 hours, including overtime.

2. The contract includes air monitoring to be performed throughout the entire project. The owner, however, will only pay for up to 35 shifts (of no more than 8 hours per day) for air monitoring services. As such the contractor is responsible for the reimbursement to the owner's air monitoring firm for all time expended beyond the 8 hours, including overtime.
3. The contractor is also responsible for reimbursement to the owner's air monitoring firm for all time expended beyond the 8 hours in a shift. The reimbursement will be accomplished by a deduct from payment to the contractor. Air monitoring will be conducted both outside and inside of the work area before the work, during the work, and for clearance sampling at the end of the project.
4. If the asbestos abatement and selective non-asbestos demolition activities are not completed within the allotted shifts, or if the daily hour limit is exceeded, the asbestos abatement contractor will have deducted from its payment all cost associated with the additional time. This reimbursement is above and beyond any liquidated damages that may be assessed under this contract.
5. Any additional hours for this project, beyond the regular workshift, will be billed at a rate equal to that charged to the owner, which is applicable to on site and off site consulting, research, data review, travel, and report generation. This rate is applicable to the first eight (8) hours of a shift. For additional hours expended beyond the first eight (8) hours of a shift, Client will be billed at a multiple of (1.5) times the hourly rate.
6. These additional fees will be deducted from the asbestos abatement contractor for payment purposes only. The Owner has approved utilization of Emerald Environmental, Inc. for this project. The asbestos abatement contractor understands and agrees that Emerald Environmental, Inc. shall report directly to the Owner and that the asbestos abatement contractor shall not direct and/or control Emerald Environmental, Inc. Nothing contained herein shall prevent Emerald Environmental, Inc. from performing its services, including but not limited to the ability of Emerald Environmental, Inc. to stop the contractor's work, for the benefit of the Owner.
7. Air monitoring will be conducted both outside and inside of the work area before the work, during all of the work, and for clearance sampling at the end of the project.
  - a) Outside of the Work Area: Monitoring will include sampling of air outside of the work area to detect faults in the work area isolation such as:
    - (1) Contamination of the building outside of the work area with airborne asbestos fibers.
    - (2) Failure of filtration or rupture in the differential pressure system.

## 02 82 11.16

### Scope of the Work – Asbestos Abatement

- (3) Contamination of air outside the building with airborne asbestos fibers.
  - b) Inside the Work Area: The air monitoring firm may monitor airborne fiber counts in the work area. The purpose of this air monitoring is to detect airborne asbestos concentrations that may challenge the ability of the work area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.
8. Work Area Clearance: As required by AHERA, clearance air sampling will be performed by the air monitoring firm at the completion of asbestos abatement work.
9. The contractor shall facilitate and cooperate fully with air monitoring performed and shall take no action intended to distort or falsify measurements of fiber concentrations. In the event that the contractor fails to comply with these provisions, the owner may direct the contractor to stop work.
10. The contractor shall provide sufficient electrical circuits and extension cords for the air monitoring firm to conduct air monitoring.

#### G. PROJECT WORK HOURS

1. All work shall be performed Monday through Friday, between the hours of 7:00 a.m. to 5:00 p.m., except during emergencies, as authorized by the owner. The project work areas shall be available to the contractor Monday-Friday from 7:00AM-5:00PM, during daylight hours. The contractor shall schedule and perform the work in any daily 8-hour shift within that timeframe; not to exceed (5) 8-hour shifts a week. Weekend work will only be allowed if deemed necessary by the Owner and/or the Associate.
2. The contractor shall observe legal holidays unless the owner approves alternative arrangements.
3. The contractor shall not work more than (5) 8 hour shifts per week. If the contractor is granted authorization to work additional shifts other than the standard 40 hour work week, then the contractor shall be required to reimburse the consultant / owner's representative for all additional cost incurred including travel time, overtime incurred and all additional analytical fees.
4. Refer to time of completion and for the number of shifts that have been allocated for this project in the preceding section. If the contractor exceeds the number of allocated shifts, the contractor shall be required to reimburse the consultant / owner's air monitoring firm for all additional shifts and air samples. The rate of each additional shift if the 35 shifts are exceeded shall be \$1,000 per shift.

#### H. SCHEDULE OF AIR SAMPLES

1. Sample Cassettes: Samples will be collected on 25 mm. cassettes as follows:
  - a) PCM: 0.8 micrometer mixed cellulose ester.

## 02 82 11.16

### Scope of the Work – Asbestos Abatement

- b) TEM: 0.45 micrometer mixed cellulose ester or 0.40 micrometer polycarbonate, with 5.0 micron mixed cellulose ester backing filter.
2. Number and Volume of Samples: The number and volume of air samples given in the schedules is approximate. The exact number and volume of samples collected by the air monitoring firm may vary depending upon job conditions and the analytical method used.
3. Base Line
  - a) Before Start of Work: The air monitoring firm must secure air samples to establish a base line.
  - b) PCM Samples

Sample Location	Number of Samples	Limit Value (fibers/cc)	Approximate Volume (liters)	Rate (liters/minute)
Inside Work Area	3	0.01	1,200	1-16
Outside Work Area	3	0.01	1,200	1-16

- c) TEM Samples

Sample Location	Number of Samples	Limit Value (structures/cc)	Approximate Volume (liters)	Rate (liters/minute)
Inside Work Area	1	0.005	1,200	1-10
Outside Work Area	1	0.005	1,200	1-10

- d) Base Line: A level expressed in fibers per cubic centimeter that equals the greater of either (1) or (2).
  - (1) Average of the PCM samples collected outside the work area.
  - (2) 0.01 fibers per cubic centimeter.
- e) Samples collected for TEM analysis will be held without analysis. These samples will be analyzed under the conditions and terms as set forth herein.

#### 4. Daily

- a) The air monitoring firm will take samples at any time during the project as appropriate to ensure compliance with all required monitoring and the conditions of this scope of work.



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### Scope of the Work – Asbestos Abatement

b) Sample Volume and Sensitivity: Inside the work area may vary depending upon conditions in the work area. If samples are overloaded at the sample volume required for a limit value equal to the stop action levels herein, the level is considered to have been exceeded.

c) PCM Samples

Sample Location	Number of Samples	Limit Value (fibers/cc)	Approximate Volume (liters)	Rate (liters/minute)
Inside Work Area	2	0.1	100	1-10
Outside Work Area	4	0.01	1,000	1-10
HEPA Exhaust	1	0.01	1,000	1-10

5. Additional samples may be taken at the air monitoring firm's discretion. If airborne fiber counts exceed allowed limits, additional samples may be taken as necessary to monitor fiber levels.

#### I. ANALYTICAL METHODS

1. The air monitoring firm in analyzing filters used to collect air samples will use either, or both, of the following methods. Sampling rates may be varied from printed standards to allow for high volume sampling.
  - a) Phase contrast microscopy (PCM) will be performed using the NIOSH 7400 method.
  - b) Transmission electron microscopy (TEM) will be performed using the analysis method set forth in the AHERA regulation 40 CFR Part 763, Appendix A.

#### J. LABORATORY TESTING

1. The services of a testing laboratory may be employed by the air monitoring firm to perform laboratory analyses of the air samples.
2. The contractor will be provided with a copy of all air monitoring tests and results on a daily basis.

#### K. FIBERS AND STRUCTURES

1. Fibers Counted: The following procedure will be used to resolve any disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts.
  - a) Large Fibers: "Airborne Fibers" referred to above include all fibers regardless of composition as counted by phase contrast microscopy (PCM), unless additional analysis by transmission or scanning electron microscopy demonstrates to the satisfaction of the owner that non-asbestos fibers are being counted. "Airborne

## 02 82 11.16

### Scope of the Work – Asbestos Abatement

Fibers” counted in samples analyzed by transmission electron microscopy shall be asbestos fibers, greater than 5 microns in length. For purposes of stop action levels, subsequent to analysis by electron microscopy, the number of “Airborne Fibers” shall be determined by multiplying the number of fibers, regardless of composition, counted with PCM by the proportion of fibers that are asbestos as determined by TEM (a number equal to, asbestos fibers counted, divided by all fibers counted in the electron microscopy analysis).

- b) Small Structures: “Airborne Fibers” referred to above include asbestos structures (fibers, bundles, clusters or matrices) of any diameter and any length greater than 0.5 microns.

## II. EXECUTION

### A. STOP ACTION LEVELS

1. Inside Work Area: Maintain an average airborne count inside the work area of less than 0.50 fibers per cubic centimeter. If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any work shift or 8 hour period exceeds 0.50 fibers per cubic centimeter, stop all work, leave pressure differential system in operation and notify the owner. After correcting cause of high fiber levels, do not recommence work until authorized by the owner.
  - a) If airborne fiber counts exceed 1.0 fibers per cubic centimeter for any period of time, cease all work except corrective action until fiber counts fall below 0.5 fibers per cubic centimeter. After correcting cause of high fiber levels, do not recommence work until authorized by owner.
2. Outside Work Area: Any air sample taken outside of the work area that exceeds the established baseline will require stopping all work except corrective actions. The air monitor will determine the source of the high reading and so notify the contractor and owner.
  - a) If the high reading was the result of a failure of work area isolation measures, as determined by the owner, initiate the following actions:
    - (1) Immediately erect new critical barriers, as set forth in Section 02 82 16.16, Temporary Enclosures, to isolate the affected area from the balance of the building. Erect critical barriers at the next existing structural isolation of the involved space (e.g. wall, ceiling, and floor).
    - (2) Decontaminate the affected area in accordance with Section 02 82 16.33, Cleaning & Decontamination Procedures.
    - (3) Require that respiratory protection, as set forth in Section 02 82 13.16.B, Respiratory Protection, be worn in affected area until area is cleared for re-occupancy in accordance with Section 02 82 33.16, Project Decontamination and Clearance Testing.

## 02 82 11.16

### Scope of the Work – Asbestos Abatement

- (4) Leave critical barriers in place until completion of work and ensure that the operation of the pressure differential system in the work area results in a flow of air from the balance of the building into the affected area.
  - (5) If the exit from the clean room of the personnel decontamination unit enters the affected area, establish a decontamination facility consisting of a shower room and changing room, as set forth in Section 02 82 16.23, Decontamination Units, at entry point to affected area.
  - (6) After a visual inspection and acceptable final air sampling results have been conducted, remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as set forth in Section 02 82 33.16, Project Decontamination and Clearance Testing.
    - b) If the high reading was the result of other causes, as determined by the air monitor, corrective actions shall be initiated.
3. Effect on Contract Sum: Complete corrective work with no change in the contract sum if high airborne fiber counts were caused by contractor's activities, as determined by the owner.

#### B. STOP WORK

1. If the air monitor issues a stop work order, immediately and automatically conform to that stop work order, while maintaining temporary enclosures and pressure differential. Do not recommence abatement work until authorized by owner.
2. After being presented with a stop work order, immediately:
  - a) Cease all asbestos removal activities, or any other activities that disturbs ACM.
  - b) Repair any fallen, ripped or otherwise failed work area isolation measures.
  - c) Maintain in operation all work area isolation measures.
  - d) Maintain all worker protections.
  - e) Fog the air in the work area with a mist of amended water to reduce airborne fiber levels.
3. Do not recommence work until authorized by the owner.

END OF SECTION

## Handling of Lighting Ballasts and Lamps Containing Mercury

### I. GENERAL

#### A. SUMMARY

1. Emerald Environmental will remove and package all universal and chemical waste listed in the spreadsheets in this section including fluorescent and/or high intensity discharge (HID) lamps and ballasts, and any compact fluorescent lamps. The ballasts are of the electronic or magnetic type. If required by the disposal/recycling facility, all ballasts are to be segregated by type (magnetic or electronic) and packaged appropriately by Emerald Environmental. Fluorescent and HID lamps are regulated as either universal or hazardous waste and must be disposed of either through a mercury recycler or shipped to a hazardous waste treatment and disposal site. Lamps must be intact and packaged to minimize breakage. Lamps may not be crushed or broken onsite.
2. All labor, packaging, transportation and disposal and/or recycling shall be the responsibility of Emerald Environmental Inc. as described in the allowance section of the project specification.

The quantities listed in the following spreadsheets are an estimate based on visual inspection of the facility and include the waste in the project renovation areas as well as areas agreed to by the building owner. The actual number of lamps and fixtures present may be different.

FOR REFERENCE ONLY

<b>Material Description</b>	<b>Area Description</b>	<b>Total</b>
4' fluorescent bulbs	1962 Building (Rooms 10,11,12 & Adjacent Hallway Only)	60
Ballasts	1962 Building (Rooms 10,11,12 & Adjacent Hallway Only)	60
Emergency/Exit Lights with lead-acid battery	1962 Building (Hallway Adjacent To Rooms 10,11 & 12 Only)	2
Computer Monitor	1962 Building	1
4' fluorescent bulbs	1970 Building	178
Ballasts	1970 Building	178
Emergency/Exit Lights with lead-acid battery	1970 Building	9
4' fluorescent bulbs	1971 Building	150
Palletized 4' fluorescent & LED bulbs (staged in boxes)	1971 Building Multi-Purpose Room	1200
2' fluorescent bulbs (staged)	1971 Building Multi-Purpose Room	300
Mercury/Sodium bulbs (staged)	1971 Building Multi-Purpose Room	100
Exterior HID Light Fixtures (staged)	1971 Building Multi-Purpose Room	2
HID Gym Lights with Transformers	1981 Building Gym	24
4' fluorescent bulbs	1981 Building	205
U Bulbs	1981 Building Room 29	4
Ballasts	1981 Building	205
Emergency/Exit Lights with lead-acid battery	1981 Building	15
Exterior HID Light Unit/Bulbs	1981/1970 Building (Project Areas)	4

Material Description	Container or Reservoir Tank Size	Area Description	Total
Mercury Thermostat (Mercury Switch) *Note: wiring is to be left intact	NA	1962 Building Area E. of Room 8	1
Fire Extinguisher	10 Lb	1970 Building	4
Muriatic Acid	1 Gallon	1970 Building Pool Filter Room	3
Pool Filter Powder	50 Lbs Bag	1970 Building Pool Filter Room	5
NAOCL/Sodium Hypochlorite	100 Gallon	1970 Building Pool Filter Room	2
Fire Extinguisher	10 Lb	1981 Building	4

## 02 84 16

### Handling of Lighting Ballasts and Lamps Containing Mercury

#### B. DEFINITIONS

“Fluorescent Lamps” are low intensity discharge lamps that contain mercury and are commonly used in commercial and industrial lighting. Fluorescent lamps include tubes, circular and compact fluorescent lighting products, whether they use separate or integral ballast.

“High Intensity Discharge or HID Lamps” include mercury, metal halide and high-pressure sodium lamps that contain mercury.

“Ballasts” include both magnetic and electronic ballasts used to regulate the current and power to the fluorescent and HID lamps. Magnetic ballasts may or may not include capacitors containing PCBs.

“Polychlorinated Biphenyls” or “PCBs” are a class of chemical compounds regulated by the EPA and require special disposal or recycling. PCBs may be contained within a capacitor inside the lamp ballasts.

“Electronic Ballasts” are non-magnetic ballasts that incorporate printed circuitry to regulate the power and current for fluorescent lamps. The printed circuit boards use leaded solder which may cause the ballast to be classified as a hazardous waste.

END OF SECTION

**Removal and Reclamation of Refrigerants**

**I. GENERAL**

A. SUMMARY

Emerald Environmental will properly remove and recycle all refrigerant from all heating and cooling units, window air conditioners, roof top air conditioners and drinking fountains listed in the scope of work. This work is to be performed by personnel certified in the removal and recycling of refrigerants.

1. All labor, packaging, transportation and disposal and/or recycling shall be the responsibility of Emerald Environmental Inc as described in the allowance section of the project specification.

- Scope of the work is outlined on the following spreadsheet

END OF SECTION

FOR REFERENCE ONLY



<b>Material Description</b>	<b>Area Description</b>	<b>Total</b>
Window AC Units	1962 Building	11
Window AC Units	1970 Building	3
Drinking Fountain	1981 Building	1
Rooftop AC Unit (2'x2'x2')	1981 Building North Shed Build Out	1
Rooftop AC Unit (5'x3'x3')	1981 Building S. Rooftop	4



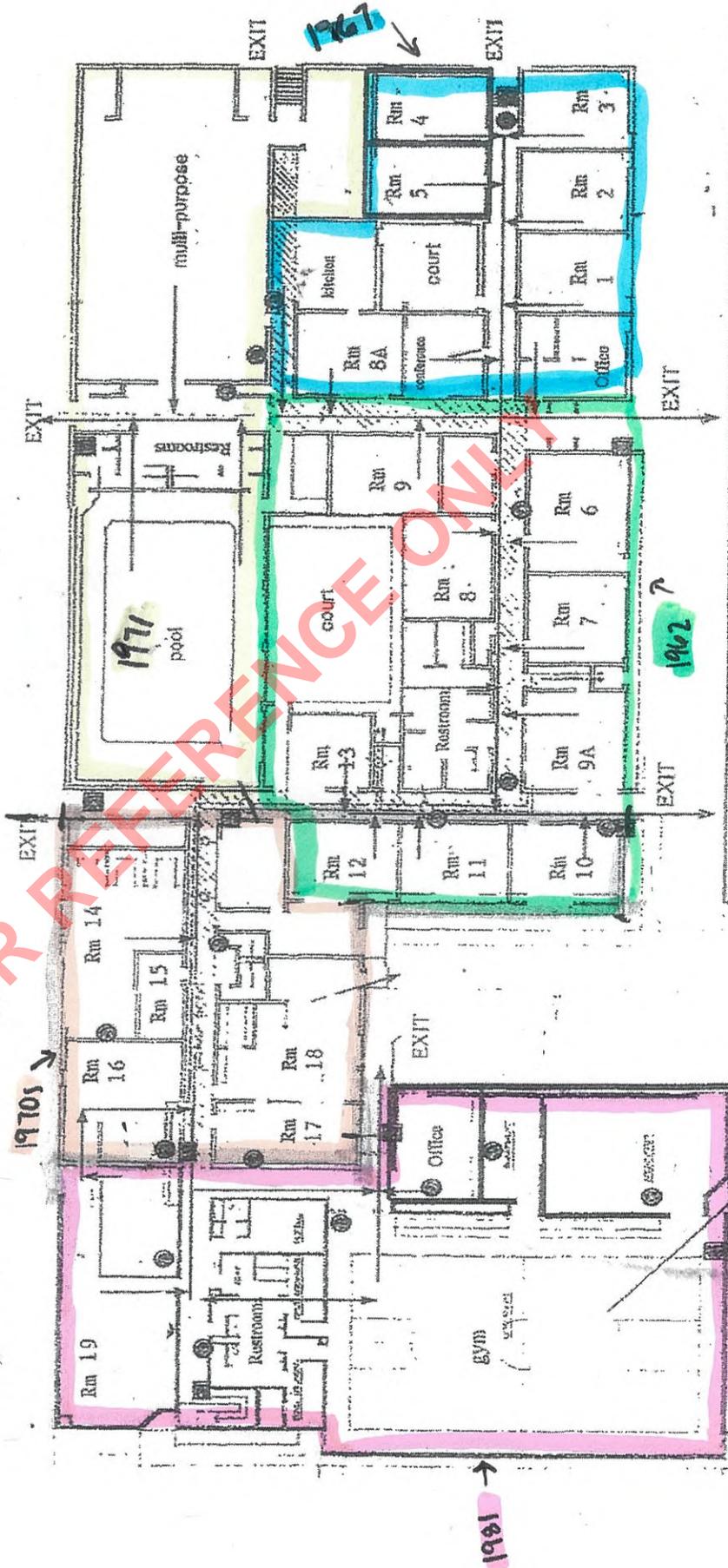
## APPENDIX A

Build Date Floor Plan, Asbestos Assessment Report &  
Renovation Drawings

FOR REFERENCE ONLY

# School Building

Fire Evacuation Route →  
Tornado Shelters are inner corridors  
away from windows





# EMERALD

## Asbestos Sampling Form

### Site/Client Information

Facility Photo	
Facility Name	Former School/YMCA Building
Facility Address	211 Moody Avenue, Carrollton OH 44615
	Prepared For:
Client Name	Brandilyn Fry
Client Company	Hasenstab Architects Inc.
Client Address	190 N. Union Street #400, Akron OH 44304
Emerald Job Number	38848
Report Date	03-06-2024
Inspection Type	Asbestos Hazard Assessment

### 1 - General Project Information

1.1 - ASSESSMENT AND SAMPLING PROCEDURES	<p>EEI conducted an asbestos hazard assessment of the facility located at the captioned site. This asbestos assessment report presents data that describes the condition and location of asbestos-containing material (ACM) identified at this facility. This assessment was conducted to identify all friable and non-friable asbestos-containing materials in the facility. Friable materials are materials that, when dry, can be crushed, pulverized, or reduced to powder by hand pressure.</p> <p>Bulk samples are collected using United States Environmental Protection Agency (EPA) guidelines in 40 CFR Part 763.86 for the type of suspect material sampled. Where practical, sample locations are determined using random sampling methods. Within each area, samples are collected where minimal damage will occur to facility structures or finishes. A particular suspect material may be found in several different locations within a facility. EPA does not require that these materials be sampled in each location, provided the materials are of the same type, age, appearance, have the same date of installation, and are sampled in accordance with Asbestos Hazard Emergency Response Act (AHERA) requirements to provide statistically reliable data that can be extrapolated onto all remaining non-sampled areas.</p> <p>EPA/AHERA-accredited inspectors determine the number of samples of each material to be collected, depending upon the material's category and the amount of material present. The objective of the AHERA protocol is to ensure that statistically reliable data is collected. This is accomplished by requiring or suggesting a minimum number of samples to be collected and, in some cases, by requiring the use of random sampling techniques to determine sample locations. However, in every case, AHERA relies on the judgment of inspectors experienced in AHERA methodology and with the type of facility being inspected.</p>
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# EMERALD

## Asbestos Sampling Form

<p><b>1.2 - METHOD OF LABORATORY ANALYSIS</b></p>	<p>Samples are analyzed in accordance with AHERA requirements using the following reference methods:</p> <ul style="list-style-type: none"> <li>•EPA Interim Method for the Detection of Asbestos in Bulk Insulation Samples (EPA 600/M4-82020, December 1982).</li> <li>•McCrone Research Institute's The Asbestos Particle Atlas.</li> </ul> <p>All bulk samples are analyzed using polarized light microscopy (PLM) visual area estimation (VAE). Friable materials containing asbestos estimated at less than ten percent by PLM-VAE are reanalyzed by PLM point counting. Additional treatment and tests may be used as required to accurately define composition (i.e., ashing, extractions, and transmission electron microscopy (TEM)). All bulk sample laboratory reports are verified through an established quality assurance (QA) procedure. Unused portions of samples are archived for a minimum of six months.</p>
<p><b>1.3 - QUALITY CONTROL PROCEDURES</b></p>	<p>All samples are analyzed by laboratories accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). These laboratories participate in the NVLAP, as well as the American Industrial Hygiene Association (AIHA) Bulk Asbestos Sample Quality Assurance Program. EEI verifies all sample data for accuracy by cross-referencing field data sheets, chain of custody forms, and field notes.</p>
<p><b>1.4 - DETERMINATION OF ACM CLASSIFICATION</b></p>	<p>The positive identification of asbestos in a material or product can only be made through laboratory analysis. The asbestos content of a suspect material is determined by collecting a bulk sample and having it analyzed by PLM. The PLM technique determines the specific type of asbestos present in the bulk sample and VAE provides an estimate of the percentage of asbestos.</p> <p>The EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) - National Emission Standard for Asbestos (40 CFR Part 61, Subpart M) defines a non-friable asbestos-containing material as any material with an asbestos content greater than one percent as determined by PLM analysis, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure. A friable material estimated to contain less than ten percent asbestos as determined by PLM-VAE must be analyzed by PLM point counting and determined to contain less than one percent asbestos in order to be considered a non-regulated ACM.</p>
	<p>A clarification memorandum issued by the EPA regarding the NESHAP regulation included the following statement:</p> <p>"The parties legally responsible for a building (owner or operator) may take a conservative approach to being regulated by the NESHAP. The responsible party may choose to act as though the building material is an asbestos-containing material (greater than 1%) at any level of asbestos content (even less than 1% asbestos). Thus, if the analyst detects asbestos in the sample and estimates the amount to be less than 10% by visual estimation, the parties legally responsible (owner or operator) for the building may (1) elect to assume the amount to be greater than 1% and treat the material as regulated asbestos-containing material or (2) require verification of the amount by point counting."</p> <p>Therefore, suspect material samples containing less than ten percent, but more than one- percent asbestos as determined by PLM-VAE are, for the purpose of this report, considered to be ACM. No distinction will be made between these materials and those classified as ACM by EPA definition. However, in most cases, material samples with asbestos content of one percent or less as determined by PLM-VAE are classified as "assumed ACM" and are so addressed in this report. Materials either "considered" or "assumed" ACM may be analyzed by PLM point counting to provide a more definitive result regarding the percentage of asbestos content.</p>
<p><b>1.5 - ASSESSMENT LIMITS</b></p>	<p>EEI conducted an asbestos hazard assessment, as well as a sampling and analysis program, to determine if ACM is present, in accordance with the OSHA Asbestos in Construction standard, 29 CFR 1926.1101, and the AHERA regulation 40 CFR part 763. All activities were conducted in accordance with AHERA sampling protocols. Any suspect materials that are encountered in the facility that are not identified in this report must be assumed ACM until testing proves otherwise. Selective, accessible portions of the facility were visually inspected based on information provided and samples were secured for suspect asbestos containing materials. Potential materials may exist within walls and pipe chases or above ceilings that were inaccessible during the inspection, and may become visible during demolition/renovation activities.</p>



# EMERALD

## Asbestos Sampling Form

### 2 - Hazard Communication

2 - Hazard Communication	The information contained in this report should be conveyed to contractors that will be working in the facility to satisfy the hazard communication requirements of the OSHA Asbestos in Construction Standard, 29 CFR 1926.1101. Materials containing asbestos may remain in the building.
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### 3 - Recommendations

3 - Recommendations	Based on the general NESHAP requirements, EEI recommends that all regulated asbestos containing material (RACM), both friable and non-friable that may become friable (that are present in quantities at, or in excess of, the regulatory limits of 260 linear feet of RACM on pipes, 160 square feet of RACM on other facility components, or 35 cubic feet of RACM on other facility components), be removed prior to demolition/renovation. All ACM which remains within the facility is required to be listed in the Notice of Demolition or Renovation to the local representative of the EPA in compliance with NESHAPS.
	This recommendation is based on standard demolition/renovation practices and their impact on building materials. In the event particular demolition/renovation techniques are to be used, (e.g. mechanical crushing, grinding, etc.) all non-friable asbestos containing materials shall be assessed for their potential to become friable during the non-standard demolition process. If the utilized non-standard demolition/renovation procedures are assessed and it is determined that they will render the asbestos containing materials friable, the material becomes RACM and must be abated prior to demolition/renovation. Any additional ACM or PACM identified in this report that may become friable during demolition/renovation activities shall also be removed prior to demolition/renovation.
	This report describes the locations of ACM identified in the facility located at the captioned site. Please refer to Appendix A for a summary of suspect materials and detailed recommendations. Please refer to Appendix B for sample locations and laboratory results. EEI represents that our services are performed within the limits prescribed by applicable regulations and in a manner consistent with the level of care and skill ordinarily exercised by other professional consultants under similar circumstances. No other representation is made to the client, expressed or implied, and no warranty or guarantee is included or intended.
	The classification of friability is based on the building inspector's observations at the time of the inspection. Deterioration over time can affect the friability of the building materials. If there is an extended delay between the survey and the abatement and/or demolition of the building, EEI recommends that a visual inspection by a qualified inspector be conducted prior to abatement and demolition to determine if the condition of the materials have changed since the survey. Current guidance from regulatory agencies recommend a survey or inspection be conducted within a year prior to the demolition.
	Please contact the undersigned if you require any additional information. Thank you for consulting Emerald Environmental, Inc.  Sincerely, EMERALD ENVIRONMENTAL, INC.
Inspector Name	Mike Baltrinic
License Type & Number	ES34618
Signature	
Inspector Name	Brendan Niehaus



# EMERALD

## Asbestos Sampling Form

License Type & Number	ES547146
Signature	

### Suspect Material - # 1

Material Description	Mudded Pipe Fittings on Fiberglass Pipe Insulation
Material Representative Photo	
HA#	MPF-1
Location	1962 Original Building; On pipes and pipe hangers (mudded hangers) in limited areas throughout the building, primarily in rooms 6, 7, 11, 9a and in the east central hallway
Quantity	15 EA
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 2

Material Description	9"x9" Floor Tile (various colors)
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# EMERALD

## Asbestos Sampling Form

<b>Material Representative Photo</b>	
<b>HA#</b>	FT-1a (off white) FT-1b (tan) FT-1c (yellow w/cream & grey streak) FT-1d (green) FT-1e (white w/black streak) FT-1f (grey w/white streak)
<b>Location</b>	1962 Original Building; limited areas throughout the building (limited areas under tacked or glued carpet)
<b>Quantity</b>	8,560 SF
<b>Is the Material Asbestos Containing?</b>	Yes
<b>Asbestos Type and Percentage</b>	Assumed based on limited samples taken for confirmation of asbestos content
<b>Material ACM Category</b>	Friable ACM
<b>Friable ACM</b>	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 3</b>	

<b>Material Description</b>	Mastic associated with 9"x9" floor tile (various colors)
<b>Material Representative Photo</b>	





# EMERALD

## Asbestos Sampling Form

HA#	FTM-1 associated with FT-1a (off white) FT-1b (tan) FT-1c (yellow w/cream & grey streak) FT-1d (green) FT-1e (white w/black streak) FT-1f (grey w/white streak)
Location	1962 Original Building; limited areas throughout the building (limited areas under tacked or glued carpet)
Quantity	8,560 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed based on limited samples taken for confirmation of asbestos content
Material ACM Category	Non-Friable ACM
Non-Friable ACM	These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.

### Suspect Material - # 4

Material Description	Drywall/Joint Compound Wall
Material Representative Photo	
HA#	DWJCW-1
Location	1962 Original Building; limited areas throughout the building, primarily in rooms 10, 11, area east of room 8, and at hallway door
Quantity	1,680 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 5

Material Description	Stainless Steel Sink Undercoating (black)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	SSSU-1
Location	1962 Original Building; room 13
Quantity	1 sink
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 6</b>	

Material Description	Carpet Adhesive
Material Representative Photo	
HA#	CA-1
Location	1962 Original Building; limited areas throughout the building, primarily in rooms 9 and 9a
Quantity	1,200 SF
Is the Material Asbestos Containing?	No



# EMERALD

## Asbestos Sampling Form

### Suspect Material - # 7

Material Description	Baseboard (dark grey) & associated Adhesive
Material Representative Photo	
HA#	BB-1 & BBA-1
Location	1962 Original Building; limited areas throughout the building, primarily in rooms 6, 7 & 8
Quantity	90 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 8

Material Description	Baseboard (black) & associated adhesive
Material Representative Photo	
HA#	BB-2 & BBA-2



# EMERALD

## Asbestos Sampling Form

Location	1962 Original Building; limited areas throughout the building
Quantity	180 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 9

Material Description	Baseboard (white) & associated adhesive
Material Representative Photo	
HA#	BB-3 & BBA-3
Location	1962 Original Building; limited areas throughout the building, primarily in the area east of room 8
Quantity	30 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 10

Material Description	Metal-Jacketed Chalkboard Core
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	CB-1
Location	1962 Original Building; limited areas throughout the building, on 5 chalk boards
Quantity	400 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 11</b>	

Material Description	Bulletin Board w/ gypsum backing
Material Representative Photo	
HA#	BUL-1
Location	1962 Original Building; limited areas throughout the building, on 5 bulletin boards
Quantity	100 SF
Is the Material Asbestos Containing?	No



## Asbestos Sampling Form

### Suspect Material - # 12

<b>Material Description</b>	Mastic associated with chalk & bulletin boards
<b>Material Representative Photo</b>	
<b>HA#</b>	CBM-1
<b>Location</b>	1962 Original Building; limited areas throughout the building, associated with chalk and bulletin boards
<b>Quantity</b>	500 SF
<b>Is the Material Asbestos Containing?</b>	Yes
<b>Asbestos Type and Percentage</b>	10% Chrysotile
<b>Material ACM Category</b>	Friable ACM
<b>Friable ACM</b>	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 13

<b>Material Description</b>	Ceramic Wall Tile Adhesive
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	CWTA-1
Location	1962 Original Building; limited areas throughout the building, primarily in restrooms and hallways
Quantity	2,780 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	0.75% Chrysotile
Were samples point counted?	Yes
Material ACM Category	Contains Not More Than 1% Asbestos
Contains Not More than 1% Asbestos	These materials are not regulated under NESHAPS or AHERA. However, potential exposure to asbestos from these materials is still regulated under the OSHA Asbestos in Construction Standard, 29 CFR 1926.1101. This standard establishes exposure limits, work practices and notification requirements for employers whose employees may be exposed to the asbestos as a result of demolition or renovation activities involving these materials.
<b>Suspect Material - # 14</b>	

Material Description	Floor Leveling Compound (white)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	FLC-1
Location	1962 Original Building; limited areas throughout the building, under flooring
Quantity	Unknown
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 15</b>	

Material Description	Boiler Interior Insulation
Material Representative Photo	
HA#	BII-1
Location	1962 Original Building; N. Central mechanical closet (access through exterior door) on the interior of one small 3'x3'x3' package boiler
Quantity	1 SF (material is at the metal interior boiler plate seams)
Is the Material Asbestos Containing?	Yes





# EMERALD

## Asbestos Sampling Form

Asbestos Type and Percentage	2% Amosite
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 16

Material Description	Exterior Caulking (outer silicone layer)
Material Representative Photo	
HA#	EC-1
Location	1962 Original Building; north exterior windows
Quantity	4 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	3% Chrysotile
Material ACM Category	Non-Friable ACM
Non-Friable ACM	These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.

### Suspect Material - # 17

Material Description	Exterior Caulking
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	EC-2
Location	1962 Original Building; north exterior windows (under silicone caulking) and exposed on east windows. On 25 total window banks with 1,200 SF of window surface area, on 5 door frames & 2 vent plates on the main exterior as well as the courtyard exterior
Quantity	10 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	5% Chrysotile
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 18</b>	

Material Description	Window Glazing Compound
Material Representative Photo	



# EMERALD

## Asbestos Sampling Form

HA#	WGC-1
Location	1962 Original Building; window units in 25 window banks, 1,200 SF of window surface area
Quantity	12 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	5% Chrysotile
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 19

Material Description	Mudded Roof Drains & associated mudded fittings on roof drain line
Material Representative Photo	
HA#	MRD-1
Location	1967 NW Addition; room 2
Quantity	1 roof drain & 2 associated pipe fittings
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 20

Material Description	Drywall/Joint Compound Wall
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	DWJCW-2
Location	1967 NW Addition; office 1 & room 1
Quantity	820 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 21</b>	

Material Description	Floor Leveling Compound (white)
Material Representative Photo	
HA#	FLC-2 (note: ACM black floor tile mastic is present over and/or under the non-acm floor leveling compound)
Location	1967 NW Addition; limited areas throughout, under flooring
Quantity	Unknown
Is the Material Asbestos Containing?	No



# EMERALD

## Asbestos Sampling Form

### Suspect Material - # 22

<b>Material Description</b>	Stair-tread (tan) & associated adhesive
<b>Material Representative Photo</b>	
<b>HA#</b>	ST-1 & STA-1
<b>Location</b>	1967 NW Addition, west stairs to west exit (includes same materials applied as baseboard)
<b>Quantity</b>	48 SF
<b>Is the Material Asbestos Containing?</b>	Yes
<b>Asbestos Type and Percentage</b>	2% chrysotile in the stair tread & in the adhesive
<b>Material ACM Category</b>	Friable ACM
<b>Friable ACM</b>	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 23

<b>Material Description</b>	12"x 12" Floor Tile (off-white w/ gold flake)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	FT-2
Location	1967 NW Addition; throughout the building, primarily under tacked carpeting and under glued carpeting in limited areas
Quantity	2,900 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 24</b>	

Material Description	Mastic associated with 12"x 12" Floor Tile (off-white w/ gold flake)
Material Representative Photo	
HA#	FTM-2
Location	1967 NW Addition; mastic only under glued carpet in room 8a and primarily under tacked carpeting and under glued carpeting in limited areas throughout the building
Quantity	3,300 SF



# EMERALD

## Asbestos Sampling Form

Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	2% Chrysotile
Material ACM Category	Non-Friable ACM
Non-Friable ACM	These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.

### Suspect Material - # 25

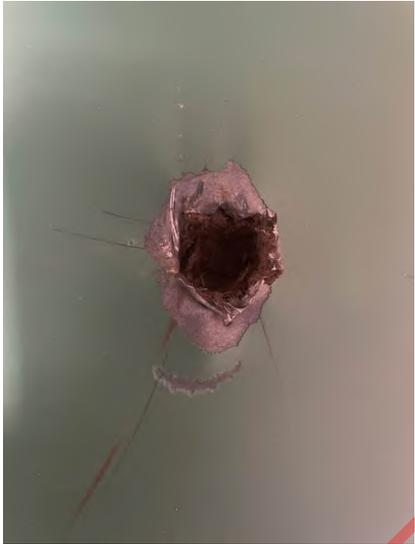
Material Description	Carpet Adhesive
Material Representative Photo	
HA#	CA-2
Location	1967 NW Addition; primarily in room 8a, office 1 & room 1
Quantity	1,080 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	2% Chrysotile
Material ACM Category	Non-Friable ACM
Non-Friable ACM	These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.

### Suspect Material - # 26



# EMERALD

## Asbestos Sampling Form

Material Description	Metal-Jacketed Chalkboard Core
Material Representative Photo	
HA#	CB-2
Location	1967 NW Addition; on chalk boards in limited areas
Quantity	400 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 27</b>	

Material Description	Bulletin Board
Material Representative Photo	
HA#	BUL-2
Location	1967 NW Addition; limited areas
Quantity	200 SF





## Asbestos Sampling Form

Is the Material Asbestos Containing?	No
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### Suspect Material - # 28

Material Description	Chalk & Bulletin Board Mastic
Material Representative Photo	
HA#	CBM-2
Location	1967 NW Addition; limited areas associated with chalk boards and bulletin boards
Quantity	600 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	0.24% Chrysotile
Were samples point counted?	Yes
Material ACM Category	Contains Not More Than 1% Asbestos
Contains Not More than 1% Asbestos	These materials are not regulated under NESHAPS or AHERA. However, potential exposure to asbestos from these materials is still regulated under the OSHA Asbestos in Construction Standard, 29 CFR 1926.1101. This standard establishes exposure limits, work practices and notification requirements for employers whose employees may be exposed to the asbestos as a result of demolition or renovation activities involving these materials.

### Suspect Material - # 29

Material Description	9"x9" floor tile (tan)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	FT-3
Location	1967 NW Addition; limited areas, primarily under glued carpet in office 1 & and under tacked carpet in the conference room
Quantity	800 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed based on positive test samples
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 30</b>	

Material Description	Mastic associated with 9"x9" floor tile (tan)
Material Representative Photo	
HA#	FTM-3



## Asbestos Sampling Form

Location	1967 NW Addition; limited areas, primarily under glued carpet in office 1 & and under tacked carpet in the conference room
Quantity	800 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed based on positive test results
Material ACM Category	Non-Friable ACM
Non-Friable ACM	These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.

### Suspect Material - # 31

Material Description	Baseboard (dark grey) & adhesive
Material Representative Photo	
HA#	BB-4 & BBA-4
Location	1967 NW Addition; office 1
Quantity	30 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 32

Material Description	Baseboard (black) & adhesive
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	BB-5 & BBA-5
Location	1967 NW Addition; limited areas throughout the building
Quantity	30 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Baseboard (non asbestos) Baseboard Adhesive (black adhesive layer) 2% Chrysotile
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 33</b>	

Material Description	Baseboard (light grey)
Material Representative Photo	
HA#	BB-6 & BBA-6



# EMERALD

## Asbestos Sampling Form

Location	1967 NW Addition; limited areas throughout the building
Quantity	200 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 34

Material Description	Baseboard (brown) & adhesive
Material Representative Photo	 A photograph showing a close-up of a wall baseboard. The baseboard is dark brown and appears to be peeling or damaged, revealing a lighter-colored adhesive underneath. The wall is a light, textured color. A large red watermark 'FOR REFERENCE ONLY' is overlaid diagonally across the image.
HA#	BB-7 & BBA-7
Location	1967 NW Addition; limited areas throughout the building
Quantity	40 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 35

Material Description	Stainless Steel Sink Undercoating (white)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	SSSU-2
Location	1967 NW Addition; kitchen
Quantity	1 sink
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	3% Chrysotile
Material ACM Category	Non-Friable ACM
Non-Friable ACM	<p>These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.</p>
<p><b>Suspect Material - # 36</b></p>	

Material Description	Window Glazing Compound
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	WGC-2
Location	1967 NW Addition; on 8 window units throughout the main exterior and courtyard exterior with 160 SF of window surface area
Quantity	2 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	2% Chrysotile
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 37</b>	

Material Description	Exterior Caulking
Material Representative Photo	
HA#	EC-2



# EMERALD

## Asbestos Sampling Form

Location	1967 NW Addition; on 8 window units throughout the main exterior and courtyard exterior with 160 SF of window surface area, on 3 door frames & 8 vent plates
Quantity	5 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 38</b>	

Material Description	(2-Layer) Plaster Ceiling
Material Representative Photo	
HA#	PC-1
Location	1971 Pool/ M.P. Room Addition; locker rooms off the pool
Quantity	546 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 39</b>	

Material Description	2'x2' & 2'x4' Ceiling Panel (hole & pinhole w/texture look)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	CP-1
Location	1971 Pool/ M.P. Room Addition; rooms north & south of MP room stage & throughout mechanical mezzanine
Quantity	500 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	2% Amosite
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 40</b>	

Material Description	2'x4' Ceiling Panel (texture look with pinhole)
Material Representative Photo	
HA#	CP-2



# EMERALD

## Asbestos Sampling Form

Location	1971 Pool/ M.P. Room Addition; throughout the hallway between the MP room and Pool
Quantity	462 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 41

Material Description	2'x4' Ceiling Panel (random fissure & hole)
Material Representative Photo	
HA#	CP-3
Location	1971 Pool/ M.P. Room Addition; partial areas throughout the MP room and stage
Quantity	1,300 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 42

Material Description	2'x4' Ceiling Panel (random gouge & pinhole)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	CP-4
Location	1971 Pool/ M.P. Room Addition; throughout the pool room and in limited areas throughout the MP room
Quantity	4,140 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 43</b>	

Material Description	9"x9" Floor Tile (various colors)
Material Representative Photo	
HA#	FT-4a (tan w/white streak) FT-4b (mint w/white streak) FT-4c (black)
Location	1971 Pool/ M.P. Room Addition; throughout the MP room, stage, adjacent storage rooms, hallways & connecting corridors
Quantity	3,160 SF



# EMERALD

## Asbestos Sampling Form

Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed based on positive testing results
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 44

Material Description	Mastic associated with 9"x9" floor tile (various colors)
Material Representative Photo	
HA#	FTM-4 associated with FT-4a (tan w/white streak) FT-4b (mint w/white streak) FT-4c (black)
Location	1971 Pool/ M.P. Room Addition; throughout the MO room, stage, adjacent storage rooms, hallways & connecting corridors
Quantity	3,160 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed based on positive testing results
Material ACM Category	Non-Friable ACM
Non-Friable ACM	These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.

### Suspect Material - # 45

Material Description	Stair-tread (beige) & associated adhesive
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## Asbestos Sampling Form

Material Representative Photo	
HA#	ST-2 & STA-2
Location	1971 Pool/ M.P. Room Addition; at MP room stage & staircase to the mechanical mezzanine (material is the stairtread & the backing baseboard)
Quantity	400 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Stairtread: 2% Chrysotile; Adhesive: non asbestos
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 46</b>	

Material Description	Ceramic Flooring Adhesive
Material Representative Photo	
HA#	CFA-1



# EMERALD

## Asbestos Sampling Form

Location	1971 Pool/ M.P. Room Addition; mens & womans locker rooms, spa room & pool perimeter
Quantity	2,100 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 47

Material Description	Ceramic Wall Tile Adhesive
Material Representative Photo	
HA#	CWTA-2
Location	1971 Pool/ M.P. Room Addition; mens & womans central locker rooms, hallway between MP room & locker rooms & spa room
Quantity	1,260 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	1% Chrysotile
Were samples point counted?	Yes
Material ACM Category	Contains Not More Than 1% Asbestos
Contains Not More than 1% Asbestos	These materials are not regulated under NESHAPS or AHERA. However, potential exposure to asbestos from these materials is still regulated under the OSHA Asbestos in Construction Standard, 29 CFR 1926.1101. This standard establishes exposure limits, work practices and notification requirements for employers whose employees may be exposed to the asbestos as a result of demolition or renovation activities involving these materials.

### Suspect Material - # 48

Material Description	Baseboard (black) and adhesive
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# EMERALD

## Asbestos Sampling Form

<b>Material Representative Photo</b>	
<b>HA#</b>	BB-8 & BBA-8
<b>Location</b>	1971 Pool/ M.P. Room Addition; limited areas throughout the building, primarily in the MP room
<b>Quantity</b>	100 SF
<b>Is the Material Asbestos Containing?</b>	Yes
<b>Asbestos Type and Percentage</b>	Baseboard: Non Asbestos; Adhesive: 0.63% Chrysotile
<b>Were samples point counted?</b>	Yes
<b>Material ACM Category</b>	Contains Not More Than 1% Asbestos
<b>Contains Not More than 1% Asbestos</b>	These materials are not regulated under NESHAPS or AHERA. However, potential exposure to asbestos from these materials is still regulated under the OSHA Asbestos in Construction Standard, 29 CFR 1926.1101. This standard establishes exposure limits, work practices and notification requirements for employers whose employees may be exposed to the asbestos as a result of demolition or renovation activities involving these materials.
<b>Suspect Material - # 49</b>	

<b>Material Description</b>	Baseboard (mint) & adhesive
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# EMERALD

## Asbestos Sampling Form

<b>Material Representative Photo</b>	
<b>HA#</b>	BB-9 & BBA-9
<b>Location</b>	1971 Pool/ M.P. Room Addition; storage rooms off the MP room stage
<b>Quantity</b>	26 SF
<b>Is the Material Asbestos Containing?</b>	No
<b>Suspect Material - # 50</b>	

<b>Material Description</b>	Exterior Caulking (tan layer & black layer)
<b>Material Representative Photo</b>	
<b>HA#</b>	EC-4
<b>Location</b>	1971 Pool/ M.P. Room Addition; throughout the exterior on 20 expansion joints and on 2 door frames & vent plates (approximately 528 LF of caulking)
<b>Quantity</b>	36 SF
<b>Is the Material Asbestos Containing?</b>	Yes





## Asbestos Sampling Form

Asbestos Type and Percentage	Tan Layer: 3% Chrysotile. Black Layer: Non Asbestos
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 51

Material Description	Mudded Pipe Fittings on fiberglass pipe insulation
Material Representative Photo	
HA#	MPF-2
Location	1970's S. Central Addition; limited areas throughout the building
Quantity	10 EA
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 52

Material Description	Mudded Roof Drains & Associated Mudded Pipe Fittings
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	MRD-2
Location	1970's S. Central Addition; throughout the building
Quantity	2 mudded roof drains & 4 associated mudded pipe fittings on fiberglass pipe insulation
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 53</b>	

Material Description	Tectum Roof Substrate
Material Representative Photo	
HA#	TRS-1



# EMERALD

## Asbestos Sampling Form

Location	1970's S. Central Addition; throughout the building
Quantity	7,000 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 54

Material Description	Drywall/Joint Compound Wall
Material Representative Photo	
HA#	DWJWCW-2
Location	1970's S. Central Addition; limited areas throughout the building, primarily in rooms 14 & 18
Quantity	760 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 55

Material Description	9"x9" Floor Tile/12"x12" Floor Tile (various colors)
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# EMERALD

## Asbestos Sampling Form

<b>Material Representative Photo</b>	
<b>HA#</b>	FT-5a (9x9 black) FT-5b (9x9 green w/white streak) FT-5c (9x9 tan w/white streak) FT-5d (white w/black streak) FT-5e (12x12 off white w/grey flake) FT-5f (12x12 mauve w/grey flake)
<b>Location</b>	1970's S. Central Addition; throughout room 18
<b>Quantity</b>	740 SF
<b>Is the Material Asbestos Containing?</b>	Yes
<b>Asbestos Type and Percentage</b>	Assumed based on positive test sampling results
<b>Material ACM Category</b>	Friable ACM
<b>Friable ACM</b>	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 56</b>	

<b>Material Description</b>	Mastic associated with 9"x9" Floor Tile/12"x12" Floor Tile (various colors)
<b>Material Representative Photo</b>	



# EMERALD

## Asbestos Sampling Form

<b>HA#</b>	FTM-5a,b,c,d,e,f. Associated with FT-5a (9x9 black) FT-5b (9x9 green w/white streak) FT-5c (9x9 tan w/white streak) FT-5d (white w/black streak) FT-5e (12x12 off white w/grey flake) FT-5f (12x12 mauve w/grey flake)
<b>Location</b>	1970's S. Central Addition; throughout room 18
<b>Quantity</b>	740 SF
<b>Is the Material Asbestos Containing?</b>	Yes
<b>Asbestos Type and Percentage</b>	Assumed based on positive test sampling results
<b>Material ACM Category</b>	Non-Friable ACM
<b>Non-Friable ACM</b>	These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.

### Suspect Material - # 57

<b>Material Description</b>	12"x12" Floor Tile (white w/ gold flake)
<b>Material Representative Photo</b>	
<b>HA#</b>	FT-6
<b>Location</b>	1970's S. Central Addition; limited areas throughout the building, primarily in the hallway, SW lobby, limited areas in room 18 & room 14 (under limited areas of glued carpet in room 14)
<b>Quantity</b>	1,860 SF
<b>Is the Material Asbestos Containing?</b>	No

### Suspect Material - # 58

<b>Material Description</b>	Mastic associated with 12"x12" Floor Tile (white w/ gold flake)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	FTM-6
Location	1970's S. Central Addition; limited areas throughout the building, primarily in the hallway, SW lobby, limited areas in room 18 & room 14 (under limited areas of glued carpet in room 14)
Quantity	1,860 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	5% Chrysotile
Material ACM Category	Non-Friable ACM
Non-Friable ACM	<p>These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.</p>
<p><b>Suspect Material - # 59</b></p>	

Material Description	12"x12" Floor Tile (off white w/pink & grey flake)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	FT-7
Location	1970's S. Central Addition; under self-adhering carpet squares in room 18a and in the 1981 gym building in the area to the west of the gym
Quantity	624 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 60</b>	

Material Description	Mastic Associated With 12"x12" Floor Tile (off white w/pink & grey flake)
Material Representative Photo	
HA#	FTM-7
Location	1970's S. Central Addition; under self-adhering carpet squares in room 18a and in the 1981 gym building in the area to the west of the gym
Quantity	624 SF



# EMERALD

## Asbestos Sampling Form

Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	5% Chrysotile
Material ACM Category	Non-Friable ACM
Non-Friable ACM	These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.

### Suspect Material - # 61

Material Description	12"x12" Self-Adhering Floor Tile (grey-white)
Material Representative Photo	
HA#	SAFT-1
Location	1970's S. Central Addition; room 16
Quantity	700 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 62

Material Description	12"x12" Floor Tile (grey)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	FT-8
Location	1970's S. Central Addition; room 16 under self-adhering floor tile
Quantity	700 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 63</b>	

Material Description	Mastic Associated With 12"x12" Floor Tile (grey)
Material Representative Photo	
HA#	FTM-8
Location	1970's S. Central Addition; room 16 under self-adhering floor tile
Quantity	700 SF
Is the Material Asbestos Containing?	No



# EMERALD

## Asbestos Sampling Form

### Suspect Material - # 64

Material Description	Carpet Adhesive
Material Representative Photo	
HA#	CA-3
Location	1970's S. Central Addition; room 15 & limited area of room 14
Quantity	420 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 65

Material Description	Hallway Ramp Tread & Adhesive
Material Representative Photo	
HA#	RT-1 & RTA-1



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## Asbestos Sampling Form

Location	1970's S. Central Addition; hallway
Quantity	120 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Ramp Tread: 5% Chrysotile. Adhesive: Non Asbestos
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 66

Material Description	Metal-Jacketed Chalkboard Core
Material Representative Photo	
HA#	CB-3
Location	1970's S. Central Addition; on 2 chalkboards throughout the building
Quantity	80 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 67

Material Description	Bulletin Board
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## Asbestos Sampling Form

<b>Material Representative Photo</b>	
<b>HA#</b>	BUL-3
<b>Location</b>	1970's S. Central Addition; on limited bulletin boards throughout the building
<b>Quantity</b>	20 SF
<b>Is the Material Asbestos Containing?</b>	No
<b>Suspect Material - # 68</b>	

<b>Material Description</b>	Chalk & Bulletin Board Mastic
<b>Material Representative Photo</b>	
<b>HA#</b>	CBM-3
<b>Location</b>	1970's S. Central Addition; limited areas throughout the building
<b>Quantity</b>	100 SF
<b>Is the Material Asbestos Containing?</b>	Yes



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## Asbestos Sampling Form

Asbestos Type and Percentage	0.35% Chrysotile
Were samples point counted?	Yes
Material ACM Category	Contains Not More Than 1% Asbestos
Contains Not More than 1% Asbestos	These materials are not regulated under NESHAPS or AHERA. However, potential exposure to asbestos from these materials is still regulated under the OSHA Asbestos in Construction Standard, 29 CFR 1926.1101. This standard establishes exposure limits, work practices and notification requirements for employers whose employees may be exposed to the asbestos as a result of demolition or renovation activities involving these materials.

### Suspect Material - # 69

Material Description	Baseboard (white) & associated adhesive
Material Representative Photo	
HA#	BB-10 & BBA-10
Location	1970's S. Central Addition; limited areas throughout the building
Quantity	40 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 70

Material Description	Baseboard (light grey) and associated adhesive
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	BB-11 & BBA-11
Location	1970's S. Central Addition; limited areas throughout the building, primarily in room 118 & the hallways
Quantity	100 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 71</b>	

Material Description	Baseboard (black) and associated adhesive
Material Representative Photo	
HA#	BB-12 & BBA-12
Location	1970's S. Central Addition; room 16
Quantity	80 SF
Is the Material Asbestos Containing?	No



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## Asbestos Sampling Form

### Suspect Material - # 72

Material Description	Exterior Caulking
Material Representative Photo	
HA#	EC-5
Location	1970's S. Central Addition; exterior associated with 6 window units (184 SF of total window surface area) & on 4 door frames and 4 Vent Plates
Quantity	3 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 73

Material Description	Window Glazing Compound
Material Representative Photo	
HA#	WGC-3



## Asbestos Sampling Form

Location	1970's S. Central Addition; exterior associated with 6 window units (184 SF of total window surface area)
Quantity	3 SF
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	5% Chrysotile
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 74

Material Description	Boiler Interior Refractory Cement & Seaming Insulation
Material Representative Photo	
HA#	BIR-1 & BISI-1
Location	1981 Gym Building Addition; lower level south boiler room *boilers were active during the time of assessment and could not be dismantled.
Quantity	30 SF of material inside 2 (5'x6'x5') package boilers on the interior steel heating plate seaming
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.

### Suspect Material - # 75

Material Description	Mudded Pipe fittings on fiberglass pipe insulation
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	MPF-3
Location	1981 Gym Building Addition; limited areas throughout the building, primarily in the boiler room and AHU mezzanine off of the gym
Quantity	40 EA
Is the Material Asbestos Containing?	Yes
Asbestos Type and Percentage	Assumed
Material ACM Category	Friable ACM
Friable ACM	These materials are friable or will become friable during demolition/renovation activities. These materials must be removed prior to demolition/renovation activities.
<b>Suspect Material - # 76</b>	

Material Description	Drywall/Joint Compound Ceiling/Soffit
Material Representative Photo	
HA#	DWJCC-1



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## Asbestos Sampling Form

Location	1981 Gym Building Addition; throughout the kitchen area, lower level northern storage shed, and upper level room 29 bathroom
Quantity	720 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 77</b>	

Material Description	Drywall/Joint Compound Wall
Material Representative Photo	
HA#	DWJCW-3
Location	1981 Gym Building Addition; limited areas in the upper level primarily in room 19 & room 29 bathroom area and limited areas throughout the lower level
Quantity	1,240 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 78</b>	

Material Description	2'x2' Ceiling Panel (heavy texture with hole & pinhole)
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# EMERALD

## Asbestos Sampling Form

Material Representative Photo	
HA#	CP-5
Location	1981 Gym Building Addition; upper level in areas surrounding the gym & limited areas throughout the south side of the lower level & in the restrooms in the 1970's addition
Quantity	2,000 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 79</b>	

Material Description	2'x2' Ceiling Panel (moisture-resistant)
Material Representative Photo	
HA#	CP-6
Location	1981 Gym Building Addition; upper level gym locker room areas
Quantity	900 SF

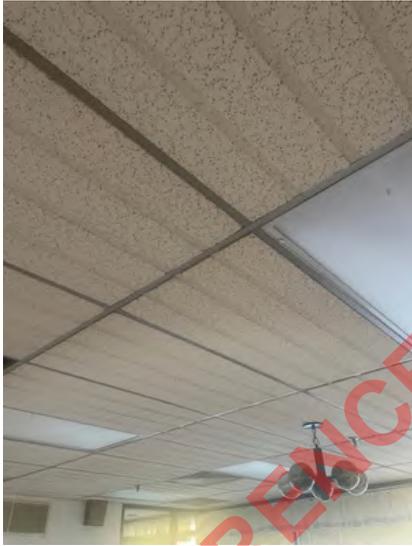


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## Asbestos Sampling Form

Is the Material Asbestos Containing?	No
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### Suspect Material - # 80

Material Description	2'x4' Ceiling Panel (revealed edge, gouge, pinhole & tracks)
Material Representative Photo	
HA#	CP-7
Location	1981 Gym Building Addition; lower level meeting room and main open northern & central areas
Quantity	2,800 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 81

Material Description	2'x4' Ceiling Panel (knock-down texture look, moisture-resistant)
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## Asbestos Sampling Form

Material Representative Photo	
HA#	CP-8
Location	1981 Gym Building Addition; throughout the lower level kitchen
Quantity	1,000 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 82</b>	

Material Description	Skim Coating Plaster
Material Representative Photo	
HA#	SCP-1
Location	1981 Gym Building Addition; throughout lower level boiler/mechanical room west and south walls and throughout the lower level west walls extending through the northern shed build-out
Quantity	2,640 SF



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## Asbestos Sampling Form

Is the Material Asbestos Containing?	No
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### Suspect Material - # 83

Material Description	Wood Fire Door (core)
Material Representative Photo	
HA#	FD-1
Location	1981 Gym Building Addition; inside 22 wood doors throughout the building
Quantity	22 wood doors throughout the building
Is the Material Asbestos Containing?	No

### Suspect Material - # 84

Material Description	Stair-tread (red) & adhesive
Material Representative Photo	

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## Asbestos Sampling Form

HA#	ST-3 & STA-3
Location	1981 Gym Building Addition; throughout the SE staircase (material makes up stairtread, backing baseboard and flooring on the landing platform)
Quantity	260 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 85

Material Description	12"x12" Floor Tile (tan w/grey & white flake)
Material Representative Photo	
HA#	FT-9
Location	1981 Gym Building Addition; limited areas throughout the building, primarily in the upper level locker room entry areas, upper level southern areas, SE staircase base, and limited areas throughout the lower level
Quantity	3,180 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 86

Material Description	Mastic associated with 12"x12" Floor Tile (tan w/grey & white flake)
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## Asbestos Sampling Form

<b>Material Representative Photo</b>	
<b>HA#</b>	FTM-9
<b>Location</b>	1981 Gym Building Addition; limited areas throughout the building, primarily in the upper level locker room entry areas, upper level southern areas, SE staircase base, and limited areas throughout the lower level
<b>Quantity</b>	3,180 SF
<b>Is the Material Asbestos Containing?</b>	Yes
<b>Asbestos Type and Percentage</b>	5% Chrysotile
<b>Material ACM Category</b>	Non-Friable ACM
<b>Non-Friable ACM</b>	<p>These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.</p>
<b>Suspect Material - # 87</b>	

<b>Material Description</b>	Carpet Adhesive
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## Asbestos Sampling Form

Material Representative Photo	
HA#	CA-4
Location	1981 Gym Building Addition; NW large room off the upper level gym, W. Room off the gym, room 29, lower level meeting room, lower level kitchen office, and lower level NE open area
Quantity	1,620 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 88</b>	

Material Description	Baseboard (brown) & adhesive
Material Representative Photo	
HA#	BB-13 & BBA-13
Location	1981 Gym Building Addition; throughout the building
Quantity	380 SF



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## Asbestos Sampling Form

Is the Material Asbestos Containing?	No
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### Suspect Material - # 89

Material Description	Baseboard (90 degree black) & associated adhesive
Material Representative Photo	
HA#	BB-14 & BBA-14
Location	1981 Gym Building Addition; throughout the gym
Quantity	140 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 90

Material Description	Tub-surround Adhesive
Material Representative Photo	



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## Asbestos Sampling Form

HA#	TSA-1
Location	1981 Gym Building Addition; room 29 bathroom tub surround
Quantity	30 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 91

Material Description	Stainless Steel Sink Undercoating (black)
Material Representative Photo	
HA#	SSSU-3
Location	1981 Gym Building Addition; upper level room 19
Quantity	1 sink
Is the Material Asbestos Containing?	No

### Suspect Material - # 92

Material Description	Stainless Steel Sink Undercoating (Gold)
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## Asbestos Sampling Form

<b>Material Representative Photo</b>	
<b>HA#</b>	SSSU-4
<b>Location</b>	1981 Gym Building Addition; on the underside of lower level kitchen sink station and dishwashing station
<b>Quantity</b>	140 SF
<b>Is the Material Asbestos Containing?</b>	Yes
<b>Asbestos Type and Percentage</b>	5% Chrysotile
<b>Material ACM Category</b>	Non-Friable ACM
<b>Non-Friable ACM</b>	<p>These materials do not generally need to be removed prior to demolition/renovation. These materials, however, may need to be removed if they become friable based on the types of procedures and equipment utilized during the demolition/renovation operations. All category I and category II non-friable ACM shall be assessed for potential friability based upon procedures utilized for removal. If the utilized procedures render the material friable, the material is classified as RACM and must be abated.</p>
<b>Suspect Material - # 93</b>	

<b>Material Description</b>	Drywall/Joint Compound Exterior Overhang
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## Asbestos Sampling Form

Material Representative Photo	
HA#	DWJCEO-1
Location	1981 Gym Building Addition; throughout lower level east side exterior and at upper level north doorway to the gym
Quantity	500 SF
Is the Material Asbestos Containing?	No
<b>Suspect Material - # 94</b>	

Material Description	Asphalt Shingle Roofing & Felt Paper
Material Representative Photo	
HA#	ASR-1
Location	1981 Gym Building Addition; northern shed build-out roof
Quantity	380 SF
Is the Material Asbestos Containing?	No



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## Asbestos Sampling Form

### Suspect Material - # 95

<b>Material Description</b>	Exterior Caulking
<b>Material Representative Photo</b>	
<b>HA#</b>	EC-6
<b>Location</b>	1981 Gym Building Addition; on window framework on 24 banks of windows (1,152 SF of window surface area) and on 16 expansion joints (320 LF of caulk at the expansion joints) and on 5 door frames and a bead at the full east wall stretch at the lower level window wall base
<b>Quantity</b>	30 SF
<b>Is the Material Asbestos Containing?</b>	No

### Suspect Material - # 96

<b>Material Description</b>	Tar Paper Roofing Vapor Barrier
<b>Material Representative Photo</b>	



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## Asbestos Sampling Form

HA#	TP-1
Location	1981 Gym Building Addition; under rubber membrane, fiberboard insulation, and foamboard insulation on metal decking throughout the roofs of the addition
Quantity	11,000 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 97

Material Description	Fiberboard Replacement Roofing Insulation
Material Representative Photo	
HA#	FRI-1
Location	Throughout all building roofs, roofs were all replaced at the same time, original roofs appear to have all been removed and same replacement roofing system installed throughout the building
Quantity	40,620 SF
Is the Material Asbestos Containing?	No

### Suspect Material - # 98

Material Description	Gypsum Roofing Substrate
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## Asbestos Sampling Form

<b>Material Representative Photo</b>	
<b>HA#</b>	GRS-1
<b>Location</b>	Throughout the 1962 original building, under rubber membrane, fiberboard insulation and foamboard insulation
<b>Quantity</b>	8,816 SF
<b>Is the Material Asbestos Containing?</b>	No

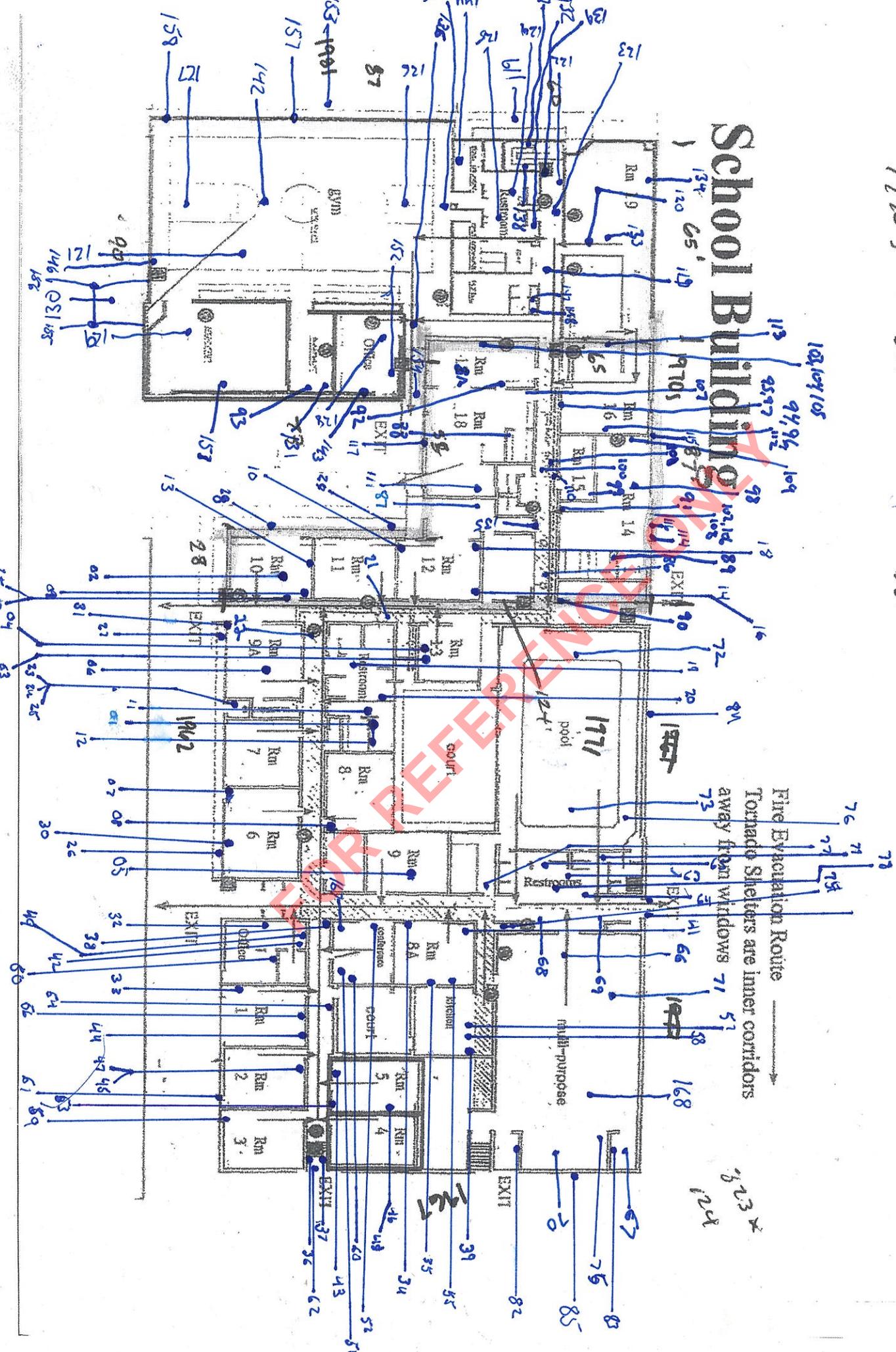
FOR REFERENCE ONLY



1981  
 3002 + 7740 x R = 23,280 ~ 23k  
 ~ 94,000

1970's  
 6090 + 1680 = 7770 ~ 8k

# School Building



Fire Evacuation Route  
 Tornado Shelters are inner corridors  
 away from windows

723 +  
 124



February 23, 2024

Emerald Environmental  
1621 Saint Clair Ave  
Kent, OH 44240

**CLIENT PROJECT:** 38848, 211 Moody Ave. SW.  
**CEI LAB CODE:** B243579

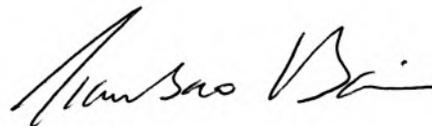
Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on February 21, 2024. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director



CEI

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# ASBESTOS ANALYTICAL REPORT

## By: Polarized Light Microscopy

Prepared for

**Emerald Environmental**

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CLIENT PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 02/23/24

TOTAL SAMPLES ANALYZED: 167

# SAMPLES >1% ASBESTOS: 48



CEI

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
211-0215-01	Layer 1	B243579.001	White	Joint Compound	None Detected
	Layer 2	B243579.001	White,Brown	Drywall	None Detected
211-0215-02	Layer 1	B243579.002	White	Joint Compound	None Detected
	Layer 2	B243579.002	White,Brown	Drywall	None Detected
211-0215-03		B243579.003	Black	Sink Undercoating	None Detected
211-0215-04		B243579.004	Black	Sink Undercoating	None Detected
211-0215-05		B243579.005	Yellow	Carpet Adhesive	None Detected
211-0215-06		B243579.006	Yellow	Carpet Adhesive	None Detected
211-0215-07		B243579.007A	Dark Gray	Baseboard	None Detected
		B243579.007B	Yellow	Adhesive	None Detected
211-0215-08		B243579.008A	Dark Gray	Baseboard	None Detected
	Layer 1	B243579.008B	Yellow	Adhesive	None Detected
	Layer 2	B243579.008B	Brown	Adhesive	None Detected
211-0215-09		B243579.009A	Black	Baseboard	None Detected
		B243579.009B	Yellow	Adhesive	None Detected
211-0215-10		B243579.010A	Black	Baseboard	None Detected
		B243579.010B	Brown	Adhesive	None Detected
211-0215-11		B243579.011A	White	Baseboard	None Detected
	Layer 1	B243579.011B	Yellow	Adhesive	None Detected
	Layer 2	B243579.011B	Brown	Adhesive	None Detected
211-0215-12		B243579.012A	White	Baseboard	None Detected
	Layer 1	B243579.012B	Yellow	Adhesive	None Detected
	Layer 2	B243579.012B	Brown	Adhesive	None Detected
211-0215-13		B243579.013	Brown	Chalkboard Core	None Detected
211-0215-14		B243579.014	Brown	Chalkboard Core	None Detected
211-0215-15		B243579.015A	Brown	Bulletin Board	None Detected
		B243579.015B	White,Brown	Gypsum Board	None Detected
211-0215-16		B243579.016A	Brown	Bulletin Board	None Detected
		B243579.016B	White,Brown	Gypsum Board	None Detected
211-0215-17		B243579.017	Black	Mastic	Chrysotile 10%
211-0215-18		B243579.018	Black	Mastic	Chrysotile 10%

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
211-0215-19	Layer 1	B243579.019	Yellow	Adhesive	None Detected
	Layer 2	B243579.019	White	Thinset	Chrysotile <1%
211-0215-20	Layer 1	B243579.020	Yellow	Adhesive	None Detected
	Layer 2	B243579.020	White	Thinset	Chrysotile <1%
211-0215-21		B243579.021	White	Leveling Compound	None Detected
211-0215-22		B243579.022	White	Leveling Compound	None Detected
211-0215-23		B243579.023	Light Gray	Boiler Insulation	Amosite 2%
211-0215-24		B243579.024	Gray	Boiler Insulation	None Detected
211-0215-25		B243579.025	Light Gray	Boiler Insulation	Amosite 2%
211-0215-26		B243579.026	Brown,Silver	Caulking	Chrysotile 3%
211-0215-27		B243579.027	Brown,Silver	Caulking	Chrysotile 3%
211-0215-28		B243579.028	Tan	Caulking	Chrysotile 5%
211-0215-29		B243579.029	Tan	Caulking	Chrysotile 5%
211-0215-30		B243579.030	Gray	Windows Glazing	Chrysotile 5%
211-0215-31		B243579.031	Gray	Windows Glazing	Chrysotile 5%
211-0215-32	Layer 1	B243579.032	Green,White	Joint Compound	None Detected
	Layer 2	B243579.032	White,Brown	Drywall	None Detected
211-0215-33	Layer 1	B243579.033	Green,White	Joint Compound	None Detected
	Layer 2	B243579.033	White,Brown	Drywall	None Detected
211-0215-34		B243579.034	White	Leveling Compound	None Detected
211-0215-35	Layer 1	B243579.035	Yellow	Mastic	None Detected
	Layer 2	B243579.035	White	Leveling Compound	None Detected
	Layer 3	B243579.035	Black	Mastic	Chrysotile 2%
211-0215-36		B243579.036A	Tan	Stair Tread	Chrysotile 2%
		B243579.036B	Brown	Adhesive	Chrysotile 2%
211-0215-37		B243579.037A	Tan	Stair Tread	Chrysotile 2%
		B243579.037B	Brown	Adhesive	Chrysotile 2%
211-0215-38		B243579.038A	Off-white,Gold	12"x12" Floor Tile	None Detected
		B243579.038B	Black	Mastic	Chrysotile 2%
211-0215-39		B243579.039A	Off-white,Gold	12"x12" Floor Tile	None Detected
		B243579.039B	Black	Mastic	Chrysotile 2%

**PROJECT:** 38848, 211 Moody Ave. SW.

**LAB CODE:** B243579

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
211-0216-41		B243579.040	Black, Yellow	Carpet Adhesive	<b>Chrysotile 2%</b>
211-0216-42		B243579.041	Yellow	Carpet Adhesive	None Detected
211-0216-43		B243579.042	Green, Brown	Chalkboard Core	None Detected
211-0216-44		B243579.043	Brown	Chalkboard Core	None Detected
211-0216-45	Layer 1	B243579.044	Dark Brown	Bulletin Board	None Detected
	Layer 2	B243579.044	Brown	Bulletin Board	None Detected
211-0216-46	Layer 1	B243579.045	Dark Brown	Bulletin Board	None Detected
	Layer 2	B243579.045	Brown	Bulletin Board	None Detected
211-0216-47		B243579.046	Brown	Mastic	<b>Chrysotile &lt;1%</b>
211-0216-48		B243579.047	Brown	Mastic	<b>Chrysotile &lt;1%</b>
211-0216-49		B243579.048A	Dark Gray	Baseboard	None Detected
	Layer 1	B243579.048B	Yellow	Adhesive	None Detected
	Layer 2	B243579.048B	Brown	Adhesive	None Detected
211-0216-50		B243579.049A	Dark Gray	Baseboard	None Detected
	Layer 1	B243579.049B	Yellow	Adhesive	None Detected
	Layer 2	B243579.049B	Brown	Adhesive	None Detected
211-0216-51		B243579.050A	Black	Baseboard	None Detected
	Layer 1	B243579.050B	Yellow	Adhesive	None Detected
	Layer 2	B243579.050B	Black	Adhesive	<b>Chrysotile 2%</b>
211-0216-52		B243579.051A	Black	Baseboard	None Detected
		B243579.051B	Brown, Yellow	Adhesive	None Detected
211-0216-53		B243579.052A	Light Gray	Baseboard	None Detected
		B243579.052B	Brown	Adhesive	None Detected
211-0216-54		B243579.053A	Light Gray	Baseboard	None Detected
		B243579.053B	Brown	Adhesive	None Detected
211-0216-55		B243579.054A	Brown	Baseboard	None Detected
	Layer 1	B243579.054B	Yellow	Adhesive	None Detected
	Layer 2	B243579.054B	Brown	Adhesive	None Detected
211-0216-56		B243579.055A	Brown	Baseboard	None Detected
	Layer 1	B243579.055B	Yellow	Adhesive	None Detected
	Layer 2	B243579.055B	Brown	Adhesive	None Detected

PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579

**METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020**

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
211-0216-57		B243579.056	White,Pink	Sink Undercoating	Chrysotile 3%
211-0216-58		B243579.057	White,Pink	Sink Undercoating	Chrysotile 3%
211-0216-59		B243579.058	Gray	Window Glazing	Chrysotile 2%
211-0216-60		B243579.059	Gray	Window Glazing	Chrysotile 2%
211-0216-61		B243579.060	Gray	Caulking	None Detected
211-0216-62		B243579.061	Gray	Caulking	None Detected
211-0216-63	Layer 1	B243579.062	White	Plaster Skim Coat	None Detected
	Layer 2	B243579.062	Gray	Plaster Base Coat	None Detected
211-0216-64	Layer 1	B243579.063	White	Plaster Skim Coat	None Detected
	Layer 2	B243579.063	Gray	Plaster Base Coat	None Detected
211-0216-65	Layer 1	B243579.064	White	Plaster Skim Coat	None Detected
	Layer 2	B243579.064	Gray	Plaster Base Coat	None Detected
211-0216-66		B243579.065	White,Gray	2'x2' Ceiling Panel	None Detected
211-0216-67		B243579.066	White,Gray	2'x2' Ceiling Panel	Amosite 2%
211-0216-68		B243579.067	White,Gray	2'x4' Ceiling Panel	None Detected
211-0216-69		B243579.068	White,Gray	2'x4' Ceiling Panel	None Detected
211-0216-70		B243579.069	White,Gray	2'x4' Ceiling Panel	None Detected
211-0216-71		B243579.070	White,Gray	2'x4' Ceiling Panel	None Detected
211-0216-72		B243579.071	White,Gray	2'x4' Ceiling Panel	None Detected
211-0216-73		B243579.072	White,Gray	2'x4' Ceiling Panel	None Detected
211-0216-74		B243579.073A	Beige	Stair Tread	Chrysotile 2%
		B243579.073B	Yellow	Adhesive	None Detected
211-0216-75		B243579.074A	Beige	Stair Tread	Chrysotile 2%
		B243579.074B	Yellow	Adhesive	None Detected
211-0216-76	Layer 1	B243579.075	White	Adhesive	None Detected
	Layer 2	B243579.075	Gray	Grout	None Detected
211-0216-77		B243579.076	Gray	Adhesive	None Detected
211-0216-78		B243579.077	White	Adhesive	Chrysotile <1%
211-0216-79		B243579.078	White	Adhesive	Chrysotile <1%
211-0216-80		B243579.079A	Black	Baseboard	None Detected
		B243579.079B	Tan,Brown	Adhesive	Chrysotile <1%





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# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
211-0216-81		B243579.080A	Gray	Baseboard	None Detected
		B243579.080B	Brown	Adhesive	None Detected
211-0216-82		B243579.081A	Mint	Baseboard	None Detected
		B243579.081B	Brown	Adhesive	None Detected
211-0216-83		B243579.082A	Mint	Baseboard	None Detected
		B243579.082B	Brown	Adhesive	None Detected
211-0216-84		B243579.083A	White,Tan	Caulking	<b>Chrysotile 3%</b>
		B243579.083B	Black	Caulking	None Detected
211-0216-85		B243579.084A	White,Tan	Caulking	<b>Chrysotile 3%</b>
		B243579.084B	Black	Caulking	None Detected
211-0216-86		B243579.085	Tan,White	Tectum	None Detected
211-0216-87		B243579.086	Tan,White	Tectum	None Detected
211-0216-88	Layer 1	B243579.087	White	Joint Compound	None Detected
	Layer 2	B243579.087	White,Tan	Drywall	None Detected
211-0216-89	Layer 1	B243579.088	White	Joint Compound	None Detected
	Layer 2	B243579.088	White,Tan	Drywall	None Detected
211-0216-90		B243579.089A	Off-white,Gold	Floor Tile	None Detected
		B243579.089B	Black	Mastic	<b>Chrysotile 5%</b>
211-0216-91		B243579.090A	Off-white,Gold	Floor Tile	None Detected
		B243579.090B	Black	Mastic	<b>Chrysotile 5%</b>
211-0216-92		B243579.091A	Off-white,Gray	Floor Tile	None Detected
		B243579.091B	Black	Mastic	<b>Chrysotile 5%</b>
211-0216-93		B243579.092A	Off-white,Gray	Floor Tile	None Detected
		B243579.092B	Black	Mastic	<b>Chrysotile 5%</b>
211-0216-94		B243579.093A	Off-white,Gray	Floor Tile	None Detected
		B243579.093B	Clear	Mastic	None Detected
211-0216-95		B243579.094A	Off-white,Gray	Floor Tile	None Detected
		B243579.094B	Clear	Mastic	None Detected
211-0216-96		B243579.095A	Gray	Floor Tile	None Detected
		B243579.095B	Yellow	Mastic	None Detected
211-0216-97		B243579.096A	Gray	Floor Tile	None Detected

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
		B243579.096B	Yellow	Mastic	None Detected
211-0216-98		B243579.097	Yellow	Carpet Adhesive	None Detected
211-0216-99		B243579.098	Yellow	Carpet Adhesive	None Detected
211-0216-100		B243579.099A	Tan	Stair Tread	Chrysotile 5%
		B243579.099B	Yellow	Adhesive	None Detected
211-0219-101		B243579.100A	Tan	Stair Tread	Chrysotile 5%
		B243579.100B	Yellow	Adhesive	None Detected
211-0219-102		B243579.101	Tan	Chalkboard Core	None Detected
211-0219-103		B243579.102	Tan	Chalkboard Core	None Detected
211-0219-104		B243579.103	Tan	Bulletin Board Core	None Detected
211-0219-105		B243579.104	Tan	Bulletin Board Core	None Detected
211-0219-106		B243579.105	Brown	Chalkboard Mastic	Chrysotile <1%
211-0219-107		B243579.106	Brown	Chalkboard Mastic	Chrysotile <1%
211-0219-108		B243579.107A	White	Baseboard	None Detected
	Layer 1	B243579.107B	Tan	Adhesive	None Detected
	Layer 2	B243579.107B	Brown	Adhesive	None Detected
211-0219-109		B243579.108A	White	Baseboard	None Detected
	Layer 1	B243579.108B	Tan	Adhesive	None Detected
	Layer 2	B243579.108B	Brown	Adhesive	None Detected
211-0219-110		B243579.109A	Gray	Baseboard	None Detected
		B243579.109B	Brown	Adhesive	None Detected
211-0219-111		B243579.110A	Gray	Baseboard	None Detected
		B243579.110B	Brown	Adhesive	None Detected
211-0219-112		B243579.111A	Black	Baseboard	None Detected
		B243579.111B	Tan	Adhesive	None Detected
211-0219-113		B243579.112A	Black	Baseboard	None Detected
		B243579.112B	Tan	Adhesive	None Detected
211-0219-114		B243579.113	Gray	Caulking	None Detected
211-0219-115		B243579.114	Gray	Caulking	None Detected
211-0219-116		B243579.115	Gray	Window Glazing	Chrysotile 5%
211-0219-117		B243579.116	Gray	Window Glazing	Chrysotile 5%



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# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
211-0219-118	Layer 1	B243579.117	White	Joint Compound	None Detected
	Layer 2	B243579.117	White,Tan	Drywall	None Detected
211-0219-119	Layer 1	B243579.118	White	Joint Compound	None Detected
	Layer 2	B243579.118	White,Tan	Drywall	None Detected
211-0219-120	Layer 1	B243579.119	White	Joint Compound	None Detected
	Layer 2	B243579.119	White,Tan	Drywall	None Detected
211-0219-121	Layer 1	B243579.120	White	Joint Compound	None Detected
	Layer 2	B243579.120	White,Tan	Drywall	None Detected
211-0219-122		B243579.121	Gray,White	Ceiling Panel	None Detected
211-0219-123		B243579.122	Gray,White	Ceiling Panel	None Detected
211-0219-124		B243579.123	Gray,White	Ceiling Panel	None Detected
211-0219-125		B243579.124	Gray,White	Ceiling Panel	None Detected
211-0219-126		B243579.125	Gray,White	Ceiling Panel	None Detected
211-0219-127		B243579.126	Gray,White	Ceiling Panel	None Detected
211-0219-128		B243579.127	White,Tan	Ceiling Panel	None Detected
211-0219-129		B243579.128	White,Tan	Ceiling Panel	None Detected
211-0219-130		B243579.129	White,Tan	Plaster Skim Coat	None Detected
211-0219-131		B243579.130	White	Plaster Skim Coat	None Detected
211-0219-132		B243579.131	White	Plaster Skim Coat	None Detected
211-0219-133		B243579.132	White	Plaster Skim Coat	None Detected
211-0219-134		B243579.133	White	Plaster Skim Coat	None Detected
211-0219-135		B243579.134	Off-white	Fire Door Core	None Detected
211-0219-136		B243579.135	White	Fire Door Core	None Detected
211-0219-137		B243579.136A	Red	Stair Tread	None Detected
	Layer 1	B243579.136B	Tan	Adhesive	None Detected
	Layer 2	B243579.136B	Brown	Adhesive	None Detected
211-0219-138		B243579.137A	Red	Stair Tread	None Detected
	Layer 1	B243579.137B	Tan	Adhesive	None Detected
	Layer 2	B243579.137B	Brown	Adhesive	None Detected
211-0219-139		B243579.138A	Tan,Off-white	Floor Tile	None Detected
		B243579.138B	Black	Mastic	<b>Chrysotile 5%</b>

PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
211-0219-140		B243579.139A	Tan,Off-white	Floor Tile	None Detected
		B243579.139B	Black	Mastic	<b>Chrysotile 5%</b>
211-0216-141		B243579.140	Yellow	Carpet Adhesive	None Detected
211-0216-142		B243579.141	Yellow	Carpet Adhesive	None Detected
211-0219-143		B243579.142A	Brown	Baseboard	None Detected
		B243579.142B	Brown	Adhesive	None Detected
211-0219-144		B243579.143A	Brown	Baseboard	None Detected
		B243579.143B	Brown	Adhesive	None Detected
211-0219-145		B243579.144A	Black	Baseboard	None Detected
		B243579.144B	Brown	Adhesive	None Detected
211-0219-146		B243579.145A	Black	Baseboard	None Detected
		B243579.145B	Brown	Adhesive	None Detected
211-0219-147		B243579.146	White	Tub Adhesive	None Detected
211-0219-148		B243579.147	White	Tub Adhesive	None Detected
211-0219-149		B243579.148	Black	Sink Undercoating	None Detected
211-0219-150		B243579.149	Black	Sink Undercoating	None Detected
211-0219-151		B243579.150	Silver	Sink Undercoating	<b>Chrysotile 5%</b>
211-0219-152		B243579.151	Silver	Sink Undercoating	<b>Chrysotile 5%</b>
211-0219-153	Layer 1	B243579.152	White	Joint Compound	None Detected
	Layer 2	B243579.152	White,Tan	Drywall	None Detected
211-0219-154	Layer 1	B243579.153	White	Joint Compound	None Detected
	Layer 2	B243579.153	White,Tan	Drywall	None Detected
211-0219-155	Layer 1	B243579.154A	Black,Tan	Asphalt Shingle	None Detected
	Layer 2	B243579.154A	Black,Gray	Asphalt Shingle	None Detected
		B243579.154B	Black	Felt Paper	None Detected
211-0219-156	Layer 1	B243579.155A	Black,Tan	Asphalt Shingle	None Detected
	Layer 2	B243579.155A	Black,Gray	Asphalt Shingle	None Detected
		B243579.155B	Black	Felt Paper	None Detected
211-0219-157		B243579.156	Gray	Caulking	None Detected
211-0219-158		B243579.157	Gray	Caulking	None Detected
211-0219-159		B243579.158	Black	Felt Paper	None Detected

# Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

**PROJECT:** 38848, 211 Moody Ave. SW.

**LAB CODE:** B243579

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
211-0219-160		B243579.159	Black	Felt Paper	None Detected
211-0219-161		B243579.160	Brown	Fiberboard	None Detected
211-0219-162		B243579.161	Brown	Fiberboard	None Detected
211-0219-163		B243579.162	White,Brown	Gypsum Board	None Detected
211-0219-164		B243579.163	White,Brown	Gypsum Board	None Detected
211-0219-165		B243579.164A	Tan	Floor Tile	Chrysotile 5%
		B243579.164B	Black	Mastic	Chrysotile 5%
211-0219-166		B243579.165A	Green	Floor Tile	Chrysotile 5%
		B243579.165B	Black	Mastic	Chrysotile 5%
211-0219-167		B243579.166A	Tan	Floor Tile	Chrysotile 5%
		B243579.166B	Black	Mastic	Chrysotile 5%
211-0219-168		B243579.167A	Tan,White	Floor Tile	Chrysotile 5%
		B243579.167B	Black	Mastic	Chrysotile 5%

FOR REFERENCE ONLY

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
 1621 Saint Clair Ave  
 Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %	
			Fibrous		Non-Fibrous		
211-0215-01 Layer 1 B243579.001	Joint Compound	Heterogeneous			60%	Binder	None Detected
		White			35%	Calc Carb	
		Non-fibrous			5%	Paint	
Bound							
Samples B243579.001-B243579.079 analyzed by N. Moore.							
211-0215-02 Layer 2 B243579.001	Drywall	Heterogeneous	20%	Cellulose	78%	Gypsum	None Detected
		White,Brown	2%	Fiberglass			
		Fibrous					
Bound							
211-0215-02 Layer 1 B243579.002	Joint Compound	Heterogeneous			60%	Binder	None Detected
		White			35%	Calc Carb	
		Non-fibrous			5%	Paint	
Bound							
211-0215-02 Layer 2 B243579.002	Drywall	Heterogeneous	20%	Cellulose	78%	Gypsum	None Detected
		White,Brown	2%	Fiberglass			
		Fibrous					
Bound							
211-0215-03 B243579.003	Sink Undercoating	Heterogeneous	<1%	Cellulose	100%	Tar	None Detected
		Black					
		Non-fibrous					
Bound							
211-0215-04 B243579.004	Sink Undercoating	Heterogeneous	<1%	Cellulose	100%	Tar	None Detected
		Black					
		Non-fibrous					
Bound							
211-0215-05 B243579.005	Carpet Adhesive	Homogeneous			100%	Mastic	None Detected
		Yellow					
		Non-fibrous					
Bound							



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# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
1621 Saint Clair Ave  
Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
211-0215-06 B243579.006	Carpet Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
211-0215-07 B243579.007A	Baseboard	Homogeneous Dark Gray Non-fibrous Tightly Bound	100%	Vinyl	None Detected
B243579.007B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
211-0215-08 B243579.008A	Baseboard	Homogeneous Dark Gray Non-fibrous Tightly Bound	100%	Vinyl	None Detected
Layer 1 B243579.008B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.008B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
211-0215-09 B243579.009A	Baseboard	Homogeneous Black Non-fibrous Tightly Bound	100%	Vinyl	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
 1621 Saint Clair Ave  
 Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
B243579.009B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0215-10</b> B243579.010A	Baseboard	Homogeneous Black Non-fibrous Tightly Bound	100%	Vinyl	None Detected
B243579.010B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0215-11</b> B243579.011A	Baseboard	Homogeneous White Non-fibrous Tightly Bound	100%	Vinyl	None Detected
Layer 1 B243579.011B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.011B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0215-12</b> B243579.012A	Baseboard	Homogeneous White Non-fibrous Tightly Bound	100%	Vinyl	None Detected



# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
 1621 Saint Clair Ave  
 Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous	Non-Fibrous		
Layer 1 B243579.012B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic		None Detected
Layer 2 B243579.012B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic		None Detected
<b>211-0215-13</b> B243579.013	Chalkboard Core	Homogeneous Brown Fibrous Loosely Bound	100%	Cellulose		None Detected
<b>211-0215-14</b> B243579.014	Chalkboard Core	Homogeneous Brown Fibrous Loosely Bound	100%	Cellulose		None Detected
<b>211-0215-15</b> B243579.015A	Bulletin Board	Homogeneous Brown Fibrous Bound	10%	Cellulose	90% Foam	None Detected
Insufficient adhesive present.						
B243579.015B	Gypsum Board	Heterogeneous White,Brown Fibrous Bound	20%	Cellulose	80% Gypsum	None Detected
<b>211-0215-16</b> B243579.016A	Bulletin Board	Homogeneous Brown Fibrous Bound	10%	Cellulose	90% Foam	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
 1621 Saint Clair Ave  
 Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous	Non-Fibrous		
B243579.016B	Gypsum Board	Heterogeneous White, Brown Fibrous Bound	20% Cellulose	80% Gypsum		None Detected
<b>211-0215-17</b> B243579.017	Mastic	Homogeneous Black Non-fibrous Bound		90% Mastic		<b>10% Chrysotile</b>
<b>211-0215-18</b> B243579.018	Mastic	Homogeneous Black Non-fibrous Bound		90% Mastic		<b>10% Chrysotile</b>
<b>211-0215-19</b> Layer 1 B243579.019	Adhesive	Homogeneous Yellow Non-fibrous Bound		50% Silicates 50% Binder		None Detected
Layer 2 B243579.019	Thinset	Homogeneous White Non-fibrous Bound		40% Silicates 50% Binder 10% Calc Carb		<1% Chrysotile
<b>211-0215-20</b> Layer 1 B243579.020	Adhesive	Homogeneous Yellow Non-fibrous Bound		50% Silicates 50% Binder		None Detected
Layer 2 B243579.020	Thinset	Homogeneous White Non-fibrous Bound		40% Silicates 50% Binder 10% Calc Carb		<1% Chrysotile

# ASBESTOS BULK ANALYSIS

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous	Non-Fibrous		
211-0215-21 B243579.021	Leveling Compound	Homogeneous White Non-fibrous Bound		100%	Binder	None Detected
211-0215-22 B243579.022	Leveling Compound	Homogeneous White Non-fibrous Bound		100%	Binder	None Detected
211-0215-23 B243579.023	Boiler Insulation	Homogeneous Light Gray Fibrous Loosely Bound	<1% Cellulose	98%	Binder	<b>2% Amosite</b>
211-0215-24 B243579.024	Boiler Insulation	Homogeneous Gray Fibrous Loosely Bound	<1% Cellulose	100%	Binder	None Detected
211-0215-25 B243579.025	Boiler Insulation	Homogeneous Light Gray Fibrous Loosely Bound	<1% Cellulose	98%	Binder	<b>2% Amosite</b>
211-0215-26 B243579.026	Caulking	Heterogeneous Brown, Silver Non-fibrous Bound	10% Talc	87%	Caulk	<b>3% Chrysotile</b>
211-0215-27 B243579.027	Caulking	Heterogeneous Brown, Silver Non-fibrous Bound	10% Talc	87%	Caulk	<b>3% Chrysotile</b>

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
211-0215-28 B243579.028	Caulking	Heterogeneous	90%	Caulk	<b>5% Chrysotile</b>
		Tan	5%	Paint	
		Non-fibrous			
		Bound			
211-0215-29 B243579.029	Caulking	Heterogeneous	90%	Caulk	<b>5% Chrysotile</b>
		Tan	5%	Paint	
		Non-fibrous			
		Bound			
211-0215-30 B243579.030	Windows Glazing	Heterogeneous	93%	Binder	<b>5% Chrysotile</b>
		Gray	2%	Paint	
		Non-fibrous			
		Bound			
211-0215-31 B243579.031	Windows Glazing	Heterogeneous	93%	Binder	<b>5% Chrysotile</b>
		Gray	2%	Paint	
		Non-fibrous			
		Bound			
211-0215-32 Layer 1 B243579.032	Joint Compound	Heterogeneous	60%	Binder	None Detected
		Green,White	35%	Calc Carb	
		Non-fibrous	5%	Paint	
		Bound			
Layer 2 B243579.032	Drywall	Heterogeneous	20%	Cellulose	None Detected
		White,Brown	80%	Gypsum	
		Fibrous			
		Bound			
211-0215-33 Layer 1 B243579.033	Joint Compound	Heterogeneous	60%	Binder	None Detected
		Green,White	35%	Calc Carb	
		Non-fibrous	5%	Paint	
		Bound			

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %	
			Fibrous		Non-Fibrous		
Layer 2 B243579.033	Drywall	Heterogeneous White, Brown Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
<b>211-0215-34</b> B243579.034	Leveling Compound	Homogeneous White Non-fibrous Bound			100%	Binder	None Detected
<b>211-0215-35</b> Layer 1 B243579.035	Mastic	Homogeneous Yellow Non-fibrous Bound			100%	Mastic	None Detected
Layer 2 B243579.035	Leveling Compound	Homogeneous White Non-fibrous Bound			100%	Binder	None Detected
Layer 3 B243579.035	Mastic	Heterogeneous Black Non-fibrous Bound			98%	Tar	<b>2% Chrysotile</b>
<b>211-0215-36</b> B243579.036A	Stair Tread	Homogeneous Tan Non-fibrous Tightly Bound			98%	Vinyl	<b>2% Chrysotile</b>
B243579.036B	Adhesive	Homogeneous Brown Non-fibrous Bound			98%	Mastic	<b>2% Chrysotile</b>

FOR REFERENCE ONLY

# ASBESTOS BULK ANALYSIS

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
211-0215-37 B243579.037A	Stair Tread	Homogeneous Tan Non-fibrous Tightly Bound	98%	Vinyl	2% Chrysotile
B243579.037B	Adhesive	Homogeneous Brown Non-fibrous Bound	98%	Mastic	2% Chrysotile
211-0215-38 B243579.038A	12"x12" Floor Tile	Homogeneous Off-white, Gold Non-fibrous Tightly Bound	100%	Vinyl	None Detected
B243579.038B	Mastic	Heterogeneous Black Non-fibrous Bound	98%	Tar	2% Chrysotile
211-0215-39 B243579.039A	12"x12" Floor Tile	Homogeneous Off-white, Gold Non-fibrous Tightly Bound	100%	Vinyl	None Detected
B243579.039B	Mastic	Heterogeneous Black Non-fibrous Bound	98%	Tar	2% Chrysotile
211-0216-41 B243579.040	Carpet Adhesive	Heterogeneous Black, Yellow Non-fibrous Bound	49%	Tar Mastic	2% Chrysotile

Unable to separate yellow and black adhesives.

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

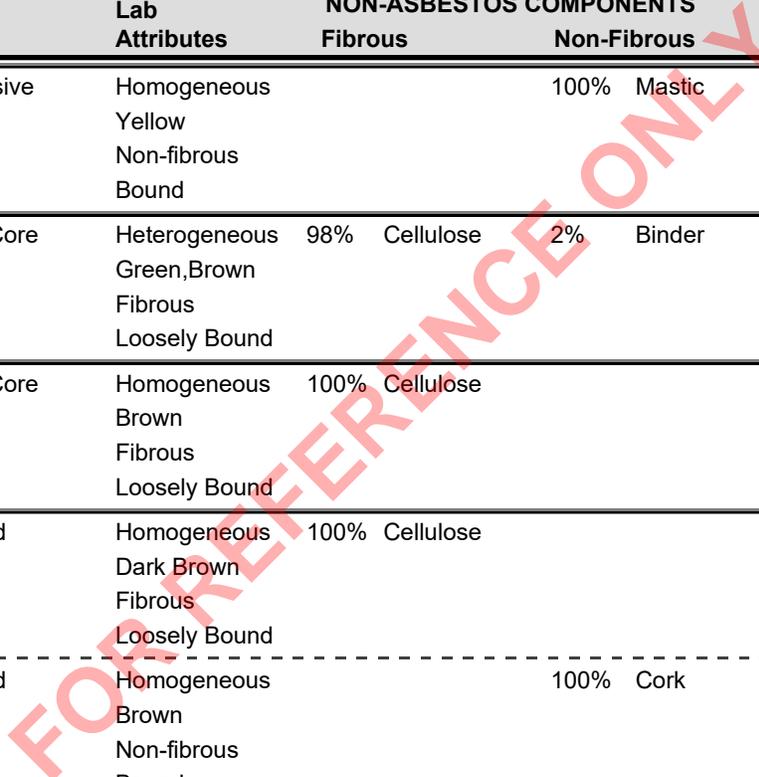
**Client:** Emerald Environmental  
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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>211-0216-42</b> B243579.041	Carpet Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-43</b> B243579.042	Chalkboard Core	Heterogeneous Green,Brown Fibrous Loosely Bound	98%	Cellulose 2% Binder	None Detected
<b>211-0216-44</b> B243579.043	Chalkboard Core	Homogeneous Brown Fibrous Loosely Bound	100%	Cellulose	None Detected
<b>211-0216-45</b> Layer 1 B243579.044	Bulletin Board	Homogeneous Dark Brown Fibrous Loosely Bound	100%	Cellulose	None Detected
Layer 2 B243579.044	Bulletin Board	Homogeneous Brown Non-fibrous Bound	100%	Cork	None Detected
<b>211-0216-46</b> Layer 1 B243579.045	Bulletin Board	Homogeneous Dark Brown Fibrous Loosely Bound	100%	Cellulose	None Detected
Layer 2 B243579.045	Bulletin Board	Homogeneous Brown Non-fibrous Bound	100%	Cork	None Detected



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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>211-0216-47</b> B243579.046	Mastic	Homogeneous Brown Non-fibrous Bound	100%	Mastic	<1% Chrysotile
<b>211-0216-48</b> B243579.047	Mastic	Homogeneous Brown Non-fibrous Bound	100%	Mastic	<1% Chrysotile
<b>211-0216-49</b> B243579.048A	Baseboard	Homogeneous Dark Gray Non-fibrous Tightly Bound	100%	Vinyl	None Detected
Layer 1 B243579.048B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.048B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-50</b> B243579.049A	Baseboard	Homogeneous Dark Gray Non-fibrous Tightly Bound	100%	Vinyl	None Detected
Layer 1 B243579.049B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected

FOR REFERENCE ONLY



# ASBESTOS BULK ANALYSIS

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
Layer 2 B243579.049B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-51</b> B243579.050A	Baseboard	Homogeneous Black Non-fibrous Tightly Bound	100%	Vinyl	None Detected
Layer 1 B243579.050B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.050B	Adhesive	Heterogeneous Black Non-fibrous Bound	98%	Tar	<b>2% Chrysotile</b>
<b>211-0216-52</b> B243579.051A	Baseboard	Homogeneous Black Non-fibrous Tightly Bound	100%	Vinyl	None Detected
B243579.051B	Adhesive	Homogeneous Brown, Yellow Non-fibrous Bound	100%	Mastic	None Detected
Unable to separate brown and yellow adhesives.					
<b>211-0216-53</b> B243579.052A	Baseboard	Homogeneous Light Gray Non-fibrous Tightly Bound	100%	Vinyl	None Detected

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# ASBESTOS BULK ANALYSIS

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**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
B243579.052B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-54</b> B243579.053A	Baseboard	Homogeneous Light Gray Non-fibrous Tightly Bound	100%	Vinyl	None Detected
B243579.053B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-55</b> B243579.054A	Baseboard	Homogeneous Brown Non-fibrous Tightly Bound	100%	Vinyl	None Detected
Layer 1 B243579.054B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.054B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-56</b> B243579.055A	Baseboard	Homogeneous Brown Non-fibrous Tightly Bound	100%	Vinyl	None Detected

# ASBESTOS BULK ANALYSIS

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
Layer 1 B243579.055B	Adhesive	Homogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.055B	Adhesive	Homogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-57</b> B243579.056	Sink Undercoating	Homogeneous White,Pink Non-fibrous Bound	97%	Binder	<b>3% Chrysotile</b>
<b>211-0216-58</b> B243579.057	Sink Undercoating	Homogeneous White,Pink Non-fibrous Bound	97%	Binder	<b>3% Chrysotile</b>
<b>211-0216-59</b> B243579.058	Window Glazing	Heterogeneous Gray Non-fibrous Bound	98% <1%	Binder Paint	<b>2% Chrysotile</b>
<b>211-0216-60</b> B243579.059	Window Glazing	Heterogeneous Gray Non-fibrous Bound	98% <1%	Binder Paint	<b>2% Chrysotile</b>
<b>211-0216-61</b> B243579.060	Caulking	Homogeneous Gray Non-fibrous Bound	2%	Fiberglass Caulk	None Detected

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %	
			Fibrous	Non-Fibrous			
<b>211-0216-62</b> B243579.061	Caulking	Homogeneous Gray Non-fibrous Bound	2%	Fiberglass	98%	Caulk	None Detected
<b>211-0216-63</b> B243579.062	Plaster Skim Coat Layer 1	Heterogeneous White Non-fibrous Bound	50%	Silicates	45%	Binder	None Detected
	Layer 2 B243579.062	Plaster Base Coat Homogeneous Gray Non-fibrous Bound	80%	Binder	20%	Perlite	None Detected
<b>211-0216-64</b> B243579.063	Plaster Skim Coat Layer 1	Heterogeneous White Non-fibrous Bound	70%	Binder	30%	Calc Carb	None Detected
	Layer 2 B243579.063	Plaster Base Coat Homogeneous Gray Non-fibrous Bound	80%	Binder	20%	Perlite	None Detected
<b>211-0216-65</b> B243579.064	Plaster Skim Coat Layer 1	Heterogeneous White Non-fibrous Bound	50%	Silicates	45%	Binder	None Detected
	Layer 2 B243579.064	Plaster Base Coat Homogeneous Gray Non-fibrous Bound	80%	Binder	20%	Perlite	None Detected

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## ASBESTOS BULK PLM, EPA 600 METHOD

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			Fibrous		Non-Fibrous		
<b>211-0216-66</b> B243579.065	2'x2' Ceiling Panel	Heterogeneous White, Gray Fibrous Loosely Bound	60% 20%	Cellulose Fiberglass	15% 5%	Perlite Paint	None Detected
<b>211-0216-67</b> B243579.066	2'x2' Ceiling Panel	Heterogeneous White, Gray Fibrous Loosely Bound	63% 15%	Cellulose Fiberglass	15% 5%	Perlite Paint	<b>2% Amosite</b>
<b>211-0216-68</b> B243579.067	2'x4' Ceiling Panel	Heterogeneous White, Gray Fibrous Loosely Bound	60% 20%	Cellulose Fiberglass	15% 5%	Perlite Paint	None Detected
<b>211-0216-69</b> B243579.068	2'x4' Ceiling Panel	Heterogeneous White, Gray Fibrous Loosely Bound	60% 20%	Cellulose Fiberglass	15% 5%	Perlite Paint	None Detected
<b>211-0216-70</b> B243579.069	2'x4' Ceiling Panel	Heterogeneous White, Gray Fibrous Loosely Bound	65% 15%	Cellulose Fiberglass	15% 5%	Perlite Paint	None Detected
<b>211-0216-71</b> B243579.070	2'x4' Ceiling Panel	Heterogeneous White, Gray Fibrous Loosely Bound	65% 15%	Cellulose Fiberglass	15% 5%	Perlite Paint	None Detected
<b>211-0216-72</b> B243579.071	2'x4' Ceiling Panel	Heterogeneous White, Gray Fibrous Loosely Bound	80%	Fiberglass	5% 15%	Paint Binder	None Detected

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>211-0216-73</b> B243579.072	2'x4' Ceiling Panel	Heterogeneous White, Gray Fibrous Loosely Bound	80%	Fiberglass 5% Paint 15% Binder	None Detected
<b>211-0216-74</b> B243579.073A	Stair Tread	Homogeneous Beige Non-fibrous Tightly Bound		98% Vinyl	<b>2% Chrysotile</b>
B243579.073B	Adhesive	Homogeneous Yellow Non-fibrous Bound		100% Mastic	None Detected
<b>211-0216-75</b> B243579.074A	Stair Tread	Homogeneous Beige Non-fibrous Tightly Bound		98% Vinyl	<b>2% Chrysotile</b>
B243579.074B	Adhesive	Homogeneous Yellow Non-fibrous Bound		100% Mastic	None Detected
<b>211-0216-76</b> Layer 1 B243579.075	Adhesive	Homogeneous White Non-fibrous Bound		100% Binder	None Detected
Layer 2 B243579.075	Grout	Homogeneous Gray Non-fibrous Bound	60% 40%	Silicates Binder	None Detected

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>211-0216-77</b> B243579.076	Adhesive	Homogeneous	60%	Silicates	None Detected
		Gray	40%	Binder	
		Non-fibrous			
		Bound			
<b>211-0216-78</b> B243579.077	Adhesive	Homogeneous	50%	Silicates	<1% Chrysotile
		White	40%	Binder	
		Non-fibrous	10%	Calc Carb	
		Bound			
<b>211-0216-79</b> B243579.078	Adhesive	Homogeneous	50%	Silicates	<1% Chrysotile
		White	40%	Binder	
		Non-fibrous	10%	Calc Carb	
		Bound			
<b>211-0216-80</b> B243579.079A	Baseboard	Heterogeneous	100%	Vinyl	None Detected
		Black			
		Non-fibrous			
B243579.079B	Adhesive	Heterogeneous	100%	Mastic	<1% Chrysotile
		Tan,Brown			
		Non-fibrous			
		Bound			
Unable to separate tan and brown mastics.					
<b>211-0216-81</b> B243579.080A	Baseboard	Heterogeneous	100%	Vinyl	None Detected
		Gray			
		Non-fibrous			
		Bound			
Samples B243579.081-B243579.167 analyzed by J. Morgan					
B243579.080B	Adhesive	Heterogeneous	100%	Mastic	None Detected
		Brown			
		Non-fibrous			
		Bound			

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %	
			Fibrous	Non-Fibrous			
211-0216-82 B243579.081A	Baseboard	Heterogeneous		100%	Vinyl	None Detected	
		Mint Non-fibrous Bound					
B243579.081B	Adhesive	Heterogeneous		100%	Mastic	None Detected	
		Brown Non-fibrous Bound					
211-0216-83 B243579.082A	Baseboard	Heterogeneous		100%	Vinyl	None Detected	
		Mint Non-fibrous Bound					
B243579.082B	Adhesive	Heterogeneous		100%	Mastic	None Detected	
		Brown Non-fibrous Bound					
211-0216-84 B243579.083A	Caulking	Heterogeneous		97%	Caulk	3% Chrysotile	
		White, Tan Fibrous Bound					
B243579.083B	Caulking	Heterogeneous	10%	Cellulose	90%	Tar	None Detected
		Black Fibrous Bound					
211-0216-85 B243579.084A	Caulking	Heterogeneous		97%	Caulk	3% Chrysotile	
		White, Tan Fibrous Bound					





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# ASBESTOS BULK ANALYSIS

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**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
B243579.084B	Caulking	Heterogeneous Black Fibrous Bound	10%	Cellulose	90%	Tar	None Detected
<b>211-0216-86</b> B243579.085	Tectum	Heterogeneous Tan,White Fibrous Bound	75%	Cellulose	15%	Binder 10% Paint	None Detected
<b>211-0216-87</b> B243579.086	Tectum	Heterogeneous Tan,White Fibrous Bound	75%	Cellulose	15%	Binder 10% Paint	None Detected
<b>211-0216-88</b> Layer 1 B243579.087	Joint Compound	Heterogeneous White Non-fibrous Bound			65%	Binder 35% Calc Carb	None Detected
Layer 2 B243579.087	Drywall	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
<b>211-0216-89</b> Layer 1 B243579.088	Joint Compound	Heterogeneous White Non-fibrous Bound			60%	Binder 35% Calc Carb 5% Paint	None Detected
Layer 2 B243579.088	Drywall	Heterogeneous White,Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected

FOR REFERENCE ONLY

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
 1621 Saint Clair Ave  
 Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
211-0216-90 B243579.089A	Floor Tile	Heterogeneous Off-white,Gold Non-fibrous Bound	100%	Vinyl	None Detected
B243579.089B	Mastic	Heterogeneous Black Fibrous Bound	95%	Tar	5% Chrysotile
211-0216-91 B243579.090A	Floor Tile	Heterogeneous Off-white,Gold Non-fibrous Bound	100%	Vinyl	None Detected
B243579.090B	Mastic	Heterogeneous Black Fibrous Bound	95%	Tar	5% Chrysotile
211-0216-92 B243579.091A	Floor Tile	Heterogeneous Off-white,Gray Non-fibrous Bound	100%	Vinyl	None Detected
B243579.091B	Mastic	Heterogeneous Black Fibrous Bound	95%	Tar	5% Chrysotile
211-0216-93 B243579.092A	Floor Tile	Heterogeneous Off-white,Gray Non-fibrous Bound	100%	Vinyl	None Detected

# ASBESTOS BULK ANALYSIS

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**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
B243579.092B	Mastic	Heterogeneous Black Fibrous Bound	95%	Tar	<b>5% Chrysotile</b>
<b>211-0216-94</b> B243579.093A	Floor Tile	Heterogeneous Off-white, Gray Non-fibrous Bound	100%	Vinyl	None Detected
B243579.093B	Mastic	Heterogeneous Clear Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-95</b> B243579.094A	Floor Tile	Heterogeneous Off-white, Gray Non-fibrous Bound	100%	Vinyl	None Detected
B243579.094B	Mastic	Heterogeneous Clear Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-96</b> B243579.095A	Floor Tile	Heterogeneous Gray Non-fibrous Bound	100%	Vinyl	None Detected
B243579.095B	Mastic	Heterogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected

# ASBESTOS BULK ANALYSIS

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**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>211-0216-97</b> B243579.096A	Floor Tile	Heterogeneous Gray Non-fibrous Bound	100%	Vinyl	None Detected
B243579.096B	Mastic	Heterogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0216-98</b> B243579.097	Carpet Adhesive	Heterogeneous Yellow Fibrous Bound	5%	Synthetic Fiber 95%	Mastic None Detected
<b>211-0216-99</b> B243579.098	Carpet Adhesive	Heterogeneous Yellow Fibrous Bound	5%	Synthetic Fiber 95%	Mastic None Detected
<b>211-0216-100</b> B243579.099A	Stair Tread	Heterogeneous Tan Fibrous Bound	95%	Vinyl	<b>5% Chrysotile</b>
B243579.099B	Adhesive	Heterogeneous Yellow Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-101</b> B243579.100A	Stair Tread	Heterogeneous Tan Fibrous Bound	95%	Vinyl	<b>5% Chrysotile</b>

FOR REFERENCE ONLY

# ASBESTOS BULK ANALYSIS

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous		Non-Fibrous	
B243579.100B	Adhesive	Heterogeneous Yellow Non-fibrous Bound	100%	Mastic		None Detected
<b>211-0219-102</b> B243579.101	Chalkboard Core	Heterogeneous Tan Fibrous Bound	90%	Cellulose	10%	Binder None Detected
<b>211-0219-103</b> B243579.102	Chalkboard Core	Heterogeneous Tan Fibrous Bound	90%	Cellulose	10%	Binder None Detected
<b>211-0219-104</b> B243579.103	Bulletin Board Core	Heterogeneous Tan Fibrous Bound	10%	Cellulose	90%	Cork None Detected
<b>211-0219-105</b> B243579.104	Bulletin Board Core	Heterogeneous Tan Fibrous Bound	10%	Cellulose	90%	Cork None Detected
<b>211-0219-106</b> B243579.105	Chalkboard Mastic	Heterogeneous Brown Fibrous Bound	100%	Mastic		<1% Chrysotile
<b>211-0219-107</b> B243579.106	Chalkboard Mastic	Heterogeneous Brown Fibrous Bound	100%	Mastic		<1% Chrysotile



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# ASBESTOS BULK ANALYSIS

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>211-0219-108</b> B243579.107A	Baseboard	Heterogeneous White Non-fibrous Bound	100%	Vinyl	None Detected
Layer 1 B243579.107B	Adhesive	Heterogeneous Tan Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.107B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-109</b> B243579.108A	Baseboard	Heterogeneous White Non-fibrous Bound	100%	Vinyl	None Detected
Layer 1 B243579.108B	Adhesive	Heterogeneous Tan Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.108B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-110</b> B243579.109A	Baseboard	Heterogeneous Gray Non-fibrous Bound	100%	Vinyl	None Detected

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
B243579.109B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-111</b> B243579.110A	Baseboard	Heterogeneous Gray Non-fibrous Bound	100%	Vinyl	None Detected
B243579.110B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-112</b> B243579.111A	Baseboard	Heterogeneous Black Non-fibrous Bound	100%	Vinyl	None Detected
B243579.111B	Adhesive	Heterogeneous Tan Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-113</b> B243579.112A	Baseboard	Heterogeneous Black Non-fibrous Bound	100%	Vinyl	None Detected
B243579.112B	Adhesive	Heterogeneous Tan Non-fibrous Bound	100%	Mastic	None Detected

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>211-0219-114</b> B243579.113	Caulking	Heterogeneous Gray Non-fibrous Bound	100%	Caulk	None Detected
<b>211-0219-115</b> B243579.114	Caulking	Heterogeneous Gray Non-fibrous Bound	100%	Caulk	None Detected
<b>211-0219-116</b> B243579.115	Window Glazing	Heterogeneous Gray Fibrous Bound	80% 15%	Binder Calc Carb	<b>5% Chrysotile</b>
<b>211-0219-117</b> B243579.116	Window Glazing	Heterogeneous Gray Fibrous Bound	80% 15%	Binder Calc Carb	<b>5% Chrysotile</b>
<b>211-0219-118</b> Layer 1 B243579.117	Joint Compound	Heterogeneous White Non-fibrous Bound	65% 35%	Binder Calc Carb	None Detected
Layer 2 B243579.117	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose Gypsum	80% None Detected
<b>211-0219-119</b> Layer 1 B243579.118	Joint Compound	Heterogeneous White Non-fibrous Bound	60% 35% 5%	Binder Calc Carb Paint	None Detected



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**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %	
			Fibrous		Non-Fibrous		
Layer 2 B243579.118	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
<b>211-0219-120</b> Layer 1 B243579.119	Joint Compound	Heterogeneous White Non-fibrous Bound			60%	Binder	None Detected
			35%		5%	Calc Carb Paint	
Layer 2 B243579.119	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
<b>211-0219-121</b> Layer 1 B243579.120	Joint Compound	Heterogeneous White Non-fibrous Bound			60%	Binder	None Detected
					35%	Calc Carb	
					5%	Paint	
Layer 2 B243579.120	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
<b>211-0219-122</b> B243579.121	Ceiling Panel	Heterogeneous Gray, White Fibrous Bound	60%	Cellulose	15%	Perlite	None Detected
			20%	Fiberglass	5%	Paint	
<b>211-0219-123</b> B243579.122	Ceiling Panel	Heterogeneous Gray, White Fibrous Bound	60%	Cellulose	15%	Perlite	None Detected
			20%	Fiberglass	5%	Paint	

FOR REFERENCE ONLY

# ASBESTOS BULK ANALYSIS

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**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous	Cellulose	Non-Fibrous	Perlite Paint	
211-0219-124 B243579.123	Ceiling Panel	Heterogeneous	60%	Cellulose	15%	Perlite	None Detected
		Gray,White Fibrous Bound	20%	Fiberglass	5%	Paint	
211-0219-125 B243579.124	Ceiling Panel	Heterogeneous	60%	Cellulose	15%	Perlite	None Detected
		Gray,White Fibrous Bound	20%	Fiberglass	5%	Paint	
211-0219-126 B243579.125	Ceiling Panel	Heterogeneous	60%	Cellulose	15%	Perlite	None Detected
		Gray,White Fibrous Bound	20%	Fiberglass	5%	Paint	
211-0219-127 B243579.126	Ceiling Panel	Heterogeneous	60%	Cellulose	15%	Perlite	None Detected
		Gray,White Fibrous Bound	20%	Fiberglass	5%	Paint	
211-0219-128 B243579.127	Ceiling Panel	Heterogeneous	20%	Cellulose	75%	Gypsum	None Detected
		White,Tan Fibrous Bound			5%	Paint	
211-0219-129 B243579.128	Ceiling Panel	Heterogeneous	20%	Cellulose	75%	Gypsum	None Detected
		White,Tan Fibrous Bound			5%	Paint	
211-0219-130 B243579.129	Plaster Skim Coat	Heterogeneous			60%	Binder	None Detected
		White,Tan Non-fibrous Bound			35%	Silicates	
					5%	Paint	

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**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous	Non-Fibrous		
<b>211-0219-131</b> B243579.130	Plaster Skim Coat	Heterogeneous	60%	Binder	None Detected	
		White	35%	Silicates		
		Non-fibrous	5%	Paint		
		Bound				
<b>211-0219-132</b> B243579.131	Plaster Skim Coat	Heterogeneous	60%	Binder	None Detected	
		White	35%	Silicates		
		Non-fibrous	5%	Paint		
		Bound				
<b>211-0219-133</b> B243579.132	Plaster Skim Coat	Heterogeneous	60%	Binder	None Detected	
		White	35%	Silicates		
		Non-fibrous	5%	Paint		
		Bound				
<b>211-0219-134</b> B243579.133	Plaster Skim Coat	Heterogeneous	60%	Binder	None Detected	
		White	35%	Silicates		
		Non-fibrous	5%	Paint		
		Bound				
<b>211-0219-135</b> B243579.134	Fire Door Core	Heterogeneous	25%	Cellulose	None Detected	
		Off-white	75%	Binder		
		Fibrous				
		Bound				
<b>211-0219-136</b> B243579.135	Fire Door Core	Heterogeneous	20%	Fiberglass	None Detected	
		White	10%	Cellulose		
		Fibrous	50%	Binder		
		Bound	20%	Perlite		
<b>211-0219-137</b> B243579.136A	Stair Tread	Heterogeneous	100%	Vinyl	None Detected	
		Red				
		Non-fibrous				
		Bound				

# ASBESTOS BULK ANALYSIS

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**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
Layer 1 B243579.136B	Adhesive	Heterogeneous Tan Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.136B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-138</b> B243579.137A	Stair Tread	Heterogeneous Red Non-fibrous Bound	100%	Vinyl	None Detected
Layer 1 B243579.137B	Adhesive	Heterogeneous Tan Non-fibrous Bound	100%	Mastic	None Detected
Layer 2 B243579.137B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-139</b> B243579.138A	Floor Tile	Heterogeneous Tan, Off-white Non-fibrous Bound	100%	Vinyl	None Detected
B243579.138B	Mastic	Heterogeneous Black Fibrous Bound	95%	Tar	<b>5% Chrysotile</b>

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
<b>211-0219-140</b> B243579.139A	Floor Tile	Heterogeneous Tan, Off-white Non-fibrous Bound	100%	Vinyl	None Detected
B243579.139B	Mastic	Heterogeneous Black Fibrous Bound	95%	Tar	<b>5% Chrysotile</b>
<b>211-0216-141</b> B243579.140	Carpet Adhesive	Heterogeneous Yellow Fibrous Bound	5%	Synthetic Fiber 95%	Mastic None Detected
<b>211-0216-142</b> B243579.141	Carpet Adhesive	Heterogeneous Yellow Fibrous Bound	5%	Synthetic Fiber 95%	Mastic None Detected
<b>211-0219-143</b> B243579.142A	Baseboard	Heterogeneous Brown Non-fibrous Bound	100%	Vinyl	None Detected
B243579.142B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-144</b> B243579.143A	Baseboard	Heterogeneous Brown Non-fibrous Bound	100%	Vinyl	None Detected

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
B243579.143B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-145</b> B243579.144A	Baseboard	Heterogeneous Black Non-fibrous Bound	100%	Vinyl	None Detected
B243579.144B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-146</b> B243579.145A	Baseboard	Heterogeneous Black Non-fibrous Bound	100%	Vinyl	None Detected
B243579.145B	Adhesive	Heterogeneous Brown Non-fibrous Bound	100%	Mastic	None Detected
<b>211-0219-147</b> B243579.146	Tub Adhesive	Heterogeneous White Non-fibrous Bound	100%	Caulk	None Detected
<b>211-0219-148</b> B243579.147	Tub Adhesive	Heterogeneous White Non-fibrous Bound	100%	Caulk	None Detected

FOR REFERENCE ONLY

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
211-0219-149 B243579.148	Sink Undercoating	Heterogeneous	80%	Tar	None Detected
		Black	20%	Binder	
		Non-fibrous			
		Bound			
211-0219-150 B243579.149	Sink Undercoating	Heterogeneous	80%	Tar	None Detected
		Black	20%	Binder	
		Non-fibrous			
		Bound			
211-0219-151 B243579.150	Sink Undercoating	Heterogeneous	70%	Paint	5% Chrysotile
		Silver	25%	Tar	
		Non-fibrous			
		Bound			
211-0219-152 B243579.151	Sink Undercoating	Heterogeneous	70%	Paint	5% Chrysotile
		Silver	25%	Tar	
		Non-fibrous			
		Bound			
211-0219-153 B243579.152	Joint Compound Layer 1	Heterogeneous	60%	Binder	None Detected
		White	35%	Calc Carb	
		Non-fibrous	5%	Paint	
		Bound			
Layer 2 B243579.152	Drywall	Heterogeneous	20%	Cellulose	None Detected
		White, Tan	80%	Gypsum	
		Fibrous			
		Bound			
211-0219-154 B243579.153	Joint Compound Layer 1	Heterogeneous	60%	Binder	None Detected
		White	35%	Calc Carb	
		Non-fibrous	5%	Paint	
		Bound			

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## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS				ASBESTOS %
			Fibrous		Non-Fibrous		
Layer 2 B243579.153	Drywall	Heterogeneous White, Tan Fibrous Bound	20%	Cellulose	80%	Gypsum	None Detected
<b>211-0219-155</b> Layer 1 B243579.154A	Asphalt Shingle	Heterogeneous Black, Tan Fibrous Bound	50%	Fiberglass	40%	Tar Gravel	None Detected
Layer 2 B243579.154A	Asphalt Shingle	Heterogeneous Black, Gray Fibrous Bound	50%	Fiberglass	40%	Tar Gravel	None Detected
B243579.154B	Felt Paper	Heterogeneous Black Fibrous Bound	65%	Fiberglass	35%	Tar	None Detected
<b>211-0219-156</b> Layer 1 B243579.155A	Asphalt Shingle	Heterogeneous Black, Tan Fibrous Bound	50%	Fiberglass	40%	Tar Gravel	None Detected
Layer 2 B243579.155A	Asphalt Shingle	Heterogeneous Black, Gray Fibrous Bound	50%	Fiberglass	40%	Tar Gravel	None Detected
B243579.155B	Felt Paper	Heterogeneous Black Fibrous Bound	65%	Fiberglass	35%	Tar	None Detected



# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
 1621 Saint Clair Ave  
 Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous	Non-Fibrous		
<b>211-0219-157</b> B243579.156	Caulking	Heterogeneous Gray Non-fibrous Bound	100%	Caulk		None Detected
<b>211-0219-158</b> B243579.157	Caulking	Heterogeneous Gray Non-fibrous Bound	100%	Caulk		None Detected
<b>211-0219-159</b> B243579.158	Felt Paper	Heterogeneous Black Fibrous Bound	65%	Cellulose	35% Tar	None Detected
<b>211-0219-160</b> B243579.159	Felt Paper	Heterogeneous Black Fibrous Bound	65%	Cellulose	35% Tar	None Detected
<b>211-0219-161</b> B243579.160	Fiberboard	Heterogeneous Brown Fibrous Bound	100%	Cellulose		None Detected
<b>211-0219-162</b> B243579.161	Fiberboard	Heterogeneous Brown Fibrous Bound	100%	Cellulose		None Detected
<b>211-0219-163</b> B243579.162	Gypsum Board	Heterogeneous White, Brown Fibrous Bound	20%	Cellulose	80% Gypsum	None Detected

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
 1621 Saint Clair Ave  
 Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS			ASBESTOS %
			Fibrous	Non-Fibrous		
211-0219-164 B243579.163	Gypsum Board	Heterogeneous White, Brown Fibrous Bound	20% Cellulose	80% Gypsum		None Detected
211-0219-165 B243579.164A	Floor Tile	Heterogeneous Tan Fibrous Bound		95% Vinyl		5% Chrysotile
B243579.164B	Mastic	Heterogeneous Black Fibrous Bound		95% Tar		5% Chrysotile
211-0219-166 B243579.165A	Floor Tile	Heterogeneous Green Fibrous Bound		95% Vinyl		5% Chrysotile
B243579.165B	Mastic	Heterogeneous Black Fibrous Bound		95% Tar		5% Chrysotile
211-0219-167 B243579.166A	Floor Tile	Heterogeneous Tan Fibrous Bound		95% Vinyl		5% Chrysotile
B243579.166B	Mastic	Heterogeneous Black Fibrous Bound		95% Tar		5% Chrysotile

FOR REFERENCE ONLY



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# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
1621 Saint Clair Ave  
Kent, OH 44240

**Lab Code:** B243579  
**Date Received:** 02-21-24  
**Date Analyzed:** 02-23-24  
**Date Reported:** 02-23-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
211-0219-168 B243579.167A	Floor Tile	Heterogeneous Tan,White Fibrous Bound	95%	Vinyl	<b>5% Chrysotile</b>
B243579.167B	Mastic	Heterogeneous Black Fibrous Bound	95%	Tar	<b>5% Chrysotile</b>

FOR REFERENCE ONLY

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**LEGEND:** Non-Anth = Non-Asbestiform Anthophyllite  
Non-Trem = Non-Asbestiform Tremolite  
Calc Carb = Calcium Carbonate

---

**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

---

**REPORTING LIMIT:** <1% by visual estimation

---

**REPORTING LIMIT FOR POINT COUNTS:** 0.25% by 400 Points or 0.1% by 1,000 Points

---

**REGULATORY LIMIT:** >1% by weight

---

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. *Estimated measurement of uncertainty is available on request.*

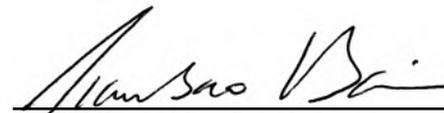
This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

**ANALYST:**

  
\_\_\_\_\_  
Nicholas Moore

**APPROVED BY:**

  
\_\_\_\_\_  
Tianbao Bai, Ph.D., CIH  
Laboratory Director



B243579

167

ASB/Lead BULK SAMPLE LOG

LGN: \_\_\_\_\_

Company: Emerald Environmental Inc.  
 Contact: Mike Baltrinic  
 Address: 1621 St. Clair Ave  
 City: Kent  
 State: Ohio 44240  
 Phone: (330) 677-0785  
 Fax: (330) 677-1567

EMERALD PROJECT #: 38848  
 DATE: 02/15/24 211 Moody Ave SW

Turnaround: Business Days  
 Same Day  3rd Day  
 24 Hour  5th Day  
 2nd Day

Email Results To: results & mbaltrinic @Emerald-Environmental.com

Asbestos  Reporting Units:  % volume (ASB) PLM  mg/kg or ppm (Pb)  
 Lead   % weight (Pb)  mg/cm2 or ug/ft2 (Pb)

ANALYTICAL NOTES: Report PLM Visual and PLM Point Count analytical results on separate reports

SAMPLE NUMBER	MATERIAL DESCRIPTION	HA#	LOCATION
211-0215 - 01	Drywall/Joint Compound Wall	DWTCL-1	1962 Bldg. Area E. of Rm. 8, S/E Central
02	↓ ↓	↓	Room 10, Central
03	Stainless Steel Sink Undercoating (Black)	SSSU-1	Sink, Rm. 13, W Sink
04	↓ ↓	↓	Sink, Rm. 13, E Sink
05	Carpet Adhesive	CA-1	Room 9, W Central
06	↓ ↓	↓	Room 9A, Central
07	Baseboard (Dark Grey) + Adhesive	BB-1 BBA-1	Room 6, N Central
08	↓ ↓ ↓	↓ ↓	Room 8, NW Corner
09	Baseboard (black) + Adhesive	BB-2 BBA-2	Room 10, E Central
10	↓ ↓	↓ ↓	Room 12, NW Corner
11	Baseboard (White) + Adhesive	BB-3 BBA-3	Area E. of Rm. 8, Central
12	↓ ↓	↓ ↓	Area E. of Rm. 8, W Central
13	Chalkboard core	CB-1	Room 10, S Central
14	↓ ↓	↓	Room 12, SW Corner
15	Bulletin Board w/Gypsum Backing	BB-1	Room 10, NW Central
16	↓ ↓	↓	Room 12, SW Corner
17	Chalk/Bulletin Board Mastic	CBM-1	Room 10, SW Central
18	↓ ↓	↓	Room 12, SE Corner
19	Ceramic Wall Tile Adhesive	CWTA-1	Boys RR, S. of urinal drain
20	↓ ↓	↓	Girls RR W. of Jan Drain.

NOTES:

Relinquished by: Mike Baltrinic 2/20/24 (7:00) Received by: [Signature] 02/21/24 9:40

Relinquished by: \_\_\_\_\_ Received by: [Signature]

7752 4568 3685



ASB/Lead BULK SAMPLE LOG

19

LGN: \_\_\_\_\_

Company: Emerald Environmental Inc.  
 Contact: Mike Baltrinic  
 Address: 1621 St. Clair Ave  
 City: Kent  
 State: Ohio 44240  
 Phone: (330) 677-0785  
 Fax: (330) 677-1567

EMERALD PROJECT #: 38848

DATE: 02/15/24 211 MOODY AVE. SW  
 Turnaround: Business Days  
 Same Day  3rd Day  
 24 Hour  5th Day  
 2nd Day

Email Results To: \_\_\_\_\_ results & mbaltrinic @Emerald-Environmental.com

Asbestos  Reporting Units:  % volume (ASB) PLM  mg/kg or ppm (Pb)  
 Lead   % weight (Pb)  mg/cm2 or ug/ft2 (Pb)

ANALYTICAL NOTES: Report PLM Visual and PLM Point Count analytical results on separate reports

SAMPLE NUMBER	MATERIAL DESCRIPTION	HA#	LOCATION
211-0215-21	Floor Leveling Compound (White)	FLL-1	1962 Bldg. E. Hallway, N.
22	L L	L	E. Hallway, S.
23	Boiler Interior insulation	BI-I-1	N. central Exterior Furnace Rm. Boiler, E
24	L L	L	N. central Exterior Furnace Rm. Boiler, central
25	L L	L	N. central Exterior Furnace Rm. Boiler, West
26	Exterior Caulking (Silicone)	EC-1	N. Extension, Outside Rm. 6
27	L L	L	N. Exterior, Outside Rm 9A
28	Exterior Caulking	EC-2	E. Exterior, North Corner, outside Rm. 10.
29	L L	L	E. Exterior, S Corner, Outside Rm. 12
30	Window Glazing Compound	WGR-1	Rm. 6, NW Corner
31	L L	L	Rm. 9A, NE Corner
32	Drywall/Joist compound WALL	DWJLW-2	1967 NW addition, OFFICE 1, NE Central
33	L L	L	Room-1, NE Corner
34	Floor Leveling Compound (White)	FLL-2	Room 8A W. threshold
35	L L	L	Room 8A E. threshold
36	Stair tread (Tan) + Adhesive	ST-1 ST-1	W. Stairs to W. Exit N.
37	L L	L L	W. Stairs to W. Exit, S.
38	12"x12" Floor tile (Cora-White w/ gold flecks) + MASTIK	FT-2 FT-2	N. HALL, SE Corner
39	L L	L L	Kitchen, SW Corner

NOTES:

Relinquished by: Mike Baltrinic 2/20/24 (1700) Received by: [Signature] 02/21/24 9:40  
 Date/Time Date/Time

Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_  
 Date/Time Date/Time

EUROFINS DEL INC  
 SAMPLES ACCEPTED

7752 4568 3685

[Signature]



# ASB/Lead BULK SAMPLE LOG

20

LGN: \_\_\_\_\_

Company: Emerald Environmental Inc.  
 Contact: Mike Baltrinic  
 Address: 1621 St. Clair Ave  
 City: Kent  
 State: Ohio 44240  
 Phone: (330) 677-0785  
 Fax: (330) 677-1567

EMERALD PROJECT #: 38843  
211 Moody Ave SW

DATE: 2/16/24  
 Turnaround: Business Days  
 Same Day     3rd Day  
 24 Hour     5th Day  
 2nd Day

Email Results To: \_\_\_\_\_ results & mbaltrinic @Emerald-Environmental.com

Asbestos  Reporting Units:  % volume (ASB) PLM     mg/kg or ppm (Pb)  
 Lead   % weight (Pb)     mg/cm2 or ug/ft2 (Pb)

ANALYTICAL NOTES: Report PLM Visual and PLM Point Count analytical results on separate reports

SAMPLE NUMBER	MATERIAL DESCRIPTION	HA#	LOCATION
211-0216 - 41	Carpet Adhesive	CA-2	Rm 2 NW corner, Room 8A, SW Corner
42	L L		OFFICE 1, NW corner
43	Chalkboard core	CB-2	Rm 5, NE Central
44	L	L	Rm 1, SW Corner
45	Bulletin Board	BU-2	Rm 2, SW Corner
46	L	L	Rm 5, SW central
47	Chalk/Bulletin Board Material	CBM-2	Rm 2, SW Corner
48	L L	L	Rm 5, SW Central
49	Baseboard (Dark grey) + Adhesive	BB-4 BBA-4	OFFICE 1, SE corner
50	L L	L L	Office 1, W Central
51	Baseboard (Black) + Adhesive	BB-5 BBA-5	Rm 5A, NE corner
52	L L L	L L	Rm 5A, SW Corner
53	Baseboard (Light grey) + Adhesive	BB-6 BBA-6	Rm 5, NW Corner
54	L L	L L	NH, Hallway, S Central
55	Baseboard (Brown) + Adhesive	BB-7 BBA-7	Rm 8, SW central
56	L L	L L	Rm 1, S Central
57	Stained steel sink undercar	SSU-2	Kitchen, E sink
58	L (Lub + G)	L	Kitchen, W Sink
59	Window Glazing Compound	WGC-2	Rm 3, NE corner
60	L L L	L	Rm 8A, NW Corner

NOTES:

Relinquished by: Mike Baltrinic 2/20/24 (1700) Received by: \_\_\_\_\_  
 Date/Time Date/Time

Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_  
 Date/Time Date/Time



# ASB/Lead BULK SAMPLE LOG

20

LGN: \_\_\_\_\_

Company: Emerald Environmental Inc.  
 Contact: Mike Baltrinic  
 Address: 1621 St. Clair Ave  
 City: Kent  
 State: Ohio 44240  
 Phone: (330) 677-0785  
 Fax: (330) 677-1567

EMERALD PROJECT #: 38848  
211 Moody Ave SW

DATE: 2/16/24  
 Turnaround: Business Days  
 Same Day  3rd Day  
 24 Hour  5th Day  
 2nd Day

Email Results To: \_\_\_\_\_ results & mbaltrinic @Emerald-Environmental.com

Asbestos  Reporting Units:  % volume (ASB) PLM  mg/kg or ppm (Pb)  
 Lead   % weight (Pb)  mg/cm2 or ug/ft2 (Pb)

ANALYTICAL NOTES: Report PLM Visual and PLM Point Count analytical results on separate reports

SAMPLE NUMBER	MATERIAL DESCRIPTION	HA#	LOCATION
7 211-0216-61	Exterior Caulking	EC-3	1967 NW Addition, outside RM 2. window
-62	L L	L	L, NW Exit Door frame.
-63	(2-Layer) Plaster ceiling	PC-1	1971 Pool/M.P. Room Addition, Boy R.R., Central
-64	L L	L	Boys R.R., Showers, W central
-65	L L	L	Girls R.R., Central
-66	2'x2' Ceiling Panel (Hole + Pinhole w/Texture Look)	CP-1	Mechanical Mezzanine, Central
-67	L L	L	Rooms S. of M.P. Room Stage, Central
-68	2'x4' Ceiling Panel (Texture Look w/Pinhole)	CP-2	Hall between M.P. RM. + RR3, N. Central
L 69	L L	L	Hall between M.P. RM. + RR3, W Central
7 70	2'x4' Ceiling Panel (Random Fracture + Hole)	CP-3	M.P. RM. Stage, Central
-71	L L	L	M.P. RM. SE
-72	2'x4' Ceiling Panel (Random gouge + Pinhole)	CP-4	Pool RM. E. Central
-73	L L	L	Pool RM. W. Central
-74	Stair tread (beige) + Adhesive	ST-2 STA-2	N. Staircase to Mech. Mezzanine, base
-75	L L	L L	M.P. RM. Stage, S. Central
-76	Ceramic Flooring Adhesive	CFA-1	Pool Room, SW
-77	L L	L	Pool Room, SPA ROOM, W. Central
-78	Ceramic wall tile adhesive	CUTA-2	RR between Pool + M.P. RM. @ Drinking FTR.
-79	L L	L	RR between Pool + M.P. RM. @ N. Side Sink
79 L 80	Baseboard (black) + Adhesive	BS-8 DBA-8	Multi Purpose RM. SE Corner

NOTES:

Relinquished by: Mike Baltrinic 2/20/24 (1700) Received by: \_\_\_\_\_  
 Date/Time Date/Time

Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_  
 Date/Time Date/Time





ASB/Lead BULK SAMPLE LOG

20

LGN: \_\_\_\_\_

Company: Emerald Environmental Inc.  
 Contact: Mike Baltrinic  
 Address: 1621 St. Clair Ave  
 City: Kent  
 State: Ohio 44240  
 Phone: (330) 677-0785  
 Fax: (330) 677-1567

EMERALD PROJECT #: 38848  
211 Moody Ave. SW

DATE: 2/16/24  
 Turnaround: Business Days  
 Same Day  3rd Day  
 24 Hour  5th Day  
 2nd Day

Email Results To: results & mbaltrinic @Emerald-Environmental.com

Asbestos  Reporting Units:  % volume (ASB) PLM  mg/kg or ppm (Pb)  
 Lead   % weight (Pb)  mg/cm2 or ug/ft2 (Pb)

ANALYTICAL NOTES: Report PLM Visual and PLM Point Count analytical results on separate reports

SAMPLE NUMBER	MATERIAL DESCRIPTION	HA#	LOCATION
↑ 211-0216 - 81	Baseboard (Black) + Adhesive	BB-8 BBa-8	1971 Pool/A.P. RM; Multi-Purpose RM, Stage, S Central
82	Baseboard (White) + Adhesive	BB-9 BBa-9	Room N. of M.P. RM Stage, S Central
83	L L	L L	Room S. of M.P. RM Stage, W Central
84	EXTERIOR CAULKING (TAN Layer + GRAY Layer)	EC-4	Expansion Joint, S Central
↓ 85	L L	L	Expansion Joint, SW Corner
↑ 86	Tecton Roof Substrate	TR5-1	1970's S. Central ADDITION Main Hallway, W. End S. Central
87	L L	L	NW Hot Water Tank RM. above Map & Tale
88	Drywall/Joint Compound (WALL)	DWTCH-2	Room 18, Closet, NE Corner
89	L L	L	Room 14, W. Central Dividing Wall
90	12"x12" Floor Tile (White w/ Gold finish)	FT-6 FTA-6	SW Lobby, NW Corner
91	L L	L L	Rm. 14 N. Central
92	12"x12" Floor tile (Coff-white w/ slate & grey finish)	FT-7 FTA-7	Room 18A AT Threshold.
93	L L	L L	1981 SW, W. central room off gym, W. central
94	12"x12" Self-Adhesive Floor tile (Grey-White)	SA FT-1	1970's S. Central Addition, Room 16. W. Central
95	L L	L	Room 16, N. Central
96	12"x12" Floor tile (grey) + MASTIC	FT-8 FTA-8	Room 16, W. Central
97	L L	L L	Room 16, N. Central
98	CARPET ADHESIVE	CA-3	Room 14 S. Central
99	L L	L	Room 15 SW Corner
99 x 100	Hallway Ramp Tread + Adhesive	RT-1 RTa-1	MAIN Hallway, @ Ramp W. central

NOTES:

Relinquished by: Mike Baltrinic 2/20/24 (11:00) Date/Time Received by: [Signature] 02/21/24 9:40 Date/Time

Relinquished by: \_\_\_\_\_ Date/Time Received by: \_\_\_\_\_ Date/Time

7752 4568 3685

EMERALD ENVIRONMENTAL, INC. SAMPLES ACCEPTED

[Signature]

20

LGN: \_\_\_\_\_

Company: Emerald Environmental Inc.  
 Contact: Mike Baltrinic  
 Address: 1621 St. Clair Ave  
 City: Kent  
 State: Ohio 44240  
 Phone: (330) 677-0785  
 Fax: (330) 677-1567

EMERALD PROJECT #: 38848  
 211 Moody Ave. SW

DATE: 02/19/24  
 Turnaround: Business Days  
 Same Day  3rd Day  
 24 Hour  5th Day  
 2nd Day

Email Results To: \_\_\_\_\_ results & mbaltrinic @Emerald-Environmental.com

Asbestos  Reporting Units:  % volume (ASB) PLM  mg/kg or ppm (Pb)  
 Lead   % weight (Pb)  mg/cm2 or ug/ft2 (Pb)

ANALYTICAL NOTES: Report PLM Visual and PLM Point Count analytical results on separate reports

SAMPLE NUMBER	MATERIAL DESCRIPTION	HA#	LOCATION
7 211-0219 -101	Hallway Ramp Tread + Adhesive	RT-1 RTA-1	1970's <sup>S.</sup> Central Addition, @ Ramp SW
102	Chalkboard core	CB-3	Rm. 14 S. Central
103	L L	L	Rm. 18 A, E. Central
104	Bulletin Board core	BB-3	Rm. 18 A, E. Central
105	L L	L	Rm. 18 A, E. Central
106	Chalkboard/Bulletin Board Mastic	CBM-3	Rm. 14 S. Central
107	L L	L	Rm. 18, E. Wall, S.
108	Baseboard (White) + Adhesive	BB-10 DBA-10	Rm. 14, N. Central
109	L L	L L	Rm. 14 E. Central
110	Baseboard (Light green) + Adhesive	BB-11 DBA-11	MAIN HALL, OUTSIDE RM 11S
111	L L	L L	Room 18, SW Central
112	Baseboard (Black) + Adhesive	BB-12 DBA-12	Room 16 W. Central
113	L L	L L	Room 16, E. Central
114	EXTERIOR CAULKING	EC-5	Window, SW window, outside Rm. 14
115	L L	L	vent plate, SE vent, outside Rm. 14
116	Window Glazing Compound	WG-3	Rm. 14, SW window
117	L L L	L	Rm. 18, NW window
118	Drywall/Joint Compound <sup>ceiling/soffit</sup>	DWJ-1	1981 sym <sup>hubs.</sup> addition kitchen soffit, central
119	L L	L	Northern Attached Sled NE corner
119. L 120	Drywall/Joint Compound WALL	DWJW-3	Rm. 19, NE Central

NOTES:

Relinquished by: Mike Baltrinic 2/20/24 (1200) Date/Time Received by: [Signature] 02/21/24 9:40 Date/Time

Relinquished by: \_\_\_\_\_ Date/Time Received by: \_\_\_\_\_ Date/Time

7752 4568 3685 [Signature]

EUROFINS CEL, INC  
 SAMPLES ACCEPTED

20

LGN: \_\_\_\_\_

 Company: Emerald Environmental Inc.  
 Contact: Mike Baltrinic  
 Address: 1621 St. Clair Ave  
 City: Kent  
 State: Ohio 44240  
 Phone: (330) 677-0785  
 Fax: (330) 677-1567

 EMERALD PROJECT #: 38848  
 211 Moody Ave. SW

 DATE: 02/19/24  
 Turnaround: Business Days  
 Same Day     3rd Day  
 24 Hour     5th Day  
 2nd Day

Email Results To: \_\_\_\_\_ results &amp; mbaltrinic @Emerald-Environmental.com

 Asbestos  Reporting Units:  % volume (ASB) PLM     mg/kg or ppm (Pb)  
 Lead   % weight (Pb)     mg/cm2 or ug/ft2 (Pb)

ANALYTICAL NOTES: Report PLM Visual and PLM Point Count analytical results on separate reports

SAMPLE NUMBER	MATERIAL DESCRIPTION	HA#	LOCATION
211-0219-121	Drywall/Joint Compound Wall	DW3C-3	1981 37m Addition Lower Level, Dining Area, NE Central
- 122	2'x2' Ceiling Panel (Heavy texture w/ holes + Pinholes)	CP-5	Upper Level, S. side, S hall/Day, SE corner
- 123	L	L	Lower Level, S. side, S hallway, central
- 124	2'x2' Ceiling Panel (moisture resistant)	CP-6	Upper Level, Gym E. Locker Rm, Boys locker room, central
- 125	L	L	Upper Level, Gym W. Locker Rm, N Central
- 126	2'x4' Ceiling Panel (revealed obj, gauge, Pinholes + cracks)	CP-7	Lower Level, main NE open area, S central
- 127	L	L	Lower Level, main NE open area, N Central
- 128	2'x4' Ceiling Panel (Knocks, Door Temperature Lock, Moisture Resistant)	CP-8	Lower Level Kitchen, S central
- 129	L	L	Lower Level Kitchen, N central
- 130	SKIM COATING Plaster	SCP-1	Lower Level, Northern Attached Shed, U central
- 131	(low pre-cast concrete wall)	L	Lower Level, kitchen, W. wall, central
- 132	L	L	Lower Level, woman's RR. W. wall, central
- 133	L	L	Lower Level, Mech. Rm, W. wall, central
- 134	L	L	Lower Level, Mech. Rm S. wall, central
- 135	Fire Door Core	FD-1	Upper Level, Rm 29 Door
- 136	L L	L	Lower Level, S. Kitchen Door
- 137	Stair tread (red) + Adhesive	ST-3 STA-3	SE staircase, E central
- 138	L	L L	SE staircase, W Central
- 139	12" x 12" Floor Tile (Tan w/ grey + white grout)	FT-9 FT-9	Upper Level, S Hall, NE corner
- 140	L + MASTIC (finke)	L L	Lower Level, E central hall, NE corner

NOTES:

 Relinquished by: Mike Baltrinic 2/20/24 (1200) Received by: COM 02/21/24 9:40  
 Date/Time Date/Time

 Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_  
 Date/Time Date/Time

77524568 3685



# ASB/Lead BULK SAMPLE LOG

LGN: \_\_\_\_\_

Company: Emerald Environmental Inc.  
 Contact: Mike Baltrinic  
 Address: 1621 St. Clair Ave  
 City: Kent  
 State: Ohio 44240  
 Phone: (330) 677-0785  
 Fax: (330) 677-1567

EMERALD PROJECT #: 38848  
 211 Moody Ave. SW

DATE: 02/19/24  
 Turnaround: Business Days  
 Same Day  3rd Day  
 24 Hour  5th Day  
 2nd Day

Email Results To: \_\_\_\_\_ results & mbaltrinic @Emerald-Environmental.com

Asbestos  Reporting Units:  % volume (ASB) PLM  mg/kg or ppm (Pb)  
 Lead   % weight (Pb)  mg/cm2 or ug/ft2 (Pb)

ANALYTICAL NOTES: Report PLM Visual and PLM Point Count analytical results on separate reports

SAMPLE NUMBER	MATERIAL DESCRIPTION	HA#	LOCATION
211-0219 - 141	Carpet Adhesive	CA-4	1981 Gym Addition Upper Level NW Area Off Gym, SE corner
- 142	L L	L	Lower Level NE area, Central
- 143	Baseboard (Brown) + Adhesive	BB-13 DBA-13	Upper Level, Rm 21, E Central
- 144	L L	L	Lower Level, Rm 53, NE Central
- 145	Baseboard 90° Baseboard (Black) + Adhesive	BB-14 DBA-14	Upper Level Gym, S Central
- 146	L L	L	Upper Level Gym, NW Corner
- 147	Tub-Surround Adhesive	TSA-1	Upper Level Rm 29, Bathroom Tub, S Central
- 148	L L	L	Upper Level Rm. 29, Bathroom Tub SW corner
- 149	Stainless Steel Sink Undercoating (Black)	SSSU-3	Upper Level Room 19 Sink, W Central
- 150	L L	L	Upper Level Room 19 Sink, E Central
- 151	Stainless Steel Sink Undercoating	SSSU-4	Lower Level Kitchen, W, Central Sink
- 152	L (Gold) L	L	Lower Level Kitchen S. Central Dish Washing Station
- 153	Drywall/Joint Compound Exterior Overhang	DWJCEO-1	Lower Level E. Exterior, Central
- 154	L L	L	Upper Level NW Exterior at Door Overhang
- 155	Asphalt Shingle Roofing + Felt Paper	AR-1	Lower Level Northern Attached Shed, NE Corner
- 156	L L L	L	Lower Level Northern Attached Shed, NW Corner
- 157	Exterior Caulking	EC-6	Lower Level Door frame, E Central
- 158	L L	L	Lower Level Window Frame, N, Corner
- 159	Tar Paper Roofing Vapor barrier	TP-1	N. Roof Field, Central
- 160	L L	L	S. Roof Field, Central

NOTES: \_\_\_\_\_

Relinquished by: Mike Baltrinic 2/20/24 (1700) Received by: \_\_\_\_\_  
 Date/Time Date/Time

Relinquished by: \_\_\_\_\_ Received by: \_\_\_\_\_  
 Date/Time Date/Time



March 6, 2024

Emerald Environmental  
1621 Saint Clair Ave  
Kent, OH 44240

**CLIENT PROJECT:** 38848, 211 Moody Ave. SW.  
**CEI LAB CODE:** B243579Av2

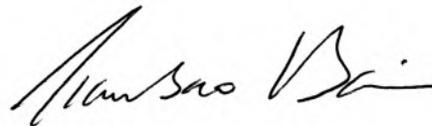
Dear Customer:

Enclosed are asbestos analysis results for PLM bulk samples received at our laboratory on February 29, 2024. The samples were analyzed for asbestos using polarized light microscopy (PLM) point count per the EPA 600 Method.

Sample results containing > 1% asbestos are considered asbestos-containing materials (ACMs) per the EPA regulatory requirements. The detection limit for the EPA 600 method is 0.25% for 400 point counts, or 0.1% for 1,000 point counts.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director



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**ASBESTOS ANALYTICAL REPORT**  
**By: Polarized Light Microscopy**

Prepared for

**Emerald Environmental**

---

CLIENT PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579Av2

TEST METHOD: PLM Point Count  
EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 03/06/24

FOR REFERENCE ONLY



CEI

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
1621 Saint Clair Ave  
Kent, OH 44240

**Lab Code:** B243579Av2  
**Date Received:** 02-29-24  
**Date Analyzed:** 03-01-24  
**Date Reported:** 03-04-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS POINT COUNT PLM, EPA 600 METHOD

Client ID	Lab ID	Material Description	POINTS		ASBESTOS	
			Total	Asbestos	%	
211-0215-19	B243579.019	Thinset	400	3	0.75%	Chrysotile
211-0215-20	B243579.020	Thinset	400	3	0.75%	Chrysotile
211-0215-78*	B243579.078	Adhesive	400	4	1.0%	Chrysotile
211-0215-79*	B243579.079	Adhesive	400	4	1.0%	Chrysotile

FOR REFERENCE ONLY



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**LEGEND:** None

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**METHOD:** EPA 600 / M4 / 82 / 020 (40 CFR Part 763, Sub. E, App. E)

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**REPORTING LIMIT:** 0.25% by 400 points or 0.1% by 1,000 points

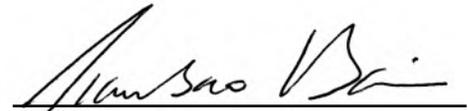
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**REGULATORY LIMIT:** >1% by weight

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This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. *Estimated measurement of uncertainty is available on request.* This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID, location, volume and area as well as date and time of sampling.

**ANALYST:**  
Nicholas Moore**APPROVED BY:**  
Tianbao Bai, Ph.D., CIH  
Laboratory Director

A version indicated by 'v' after the Lab ID# with a value greater than 1 indicates an amendment has occurred. The revised sample/description/ID is indicated by an \*

March 4, 2024

Emerald Environmental  
1621 Saint Clair Ave  
Kent, OH 44240

**CLIENT PROJECT:** 38848, 211 Moody Ave. SW.  
**CEI LAB CODE:** B243579B

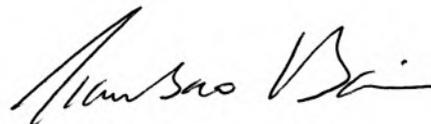
Dear Customer:

Enclosed are asbestos analysis results for PLM bulk samples received at our laboratory on February 29, 2024. The samples were analyzed for asbestos using polarized light microscopy (PLM) gravimetric point count per the EPA 600 Method.

Sample results containing > 1% asbestos are considered asbestos-containing materials (ACMs) per the EPA regulatory requirements. The detection limit for the EPA 600 method is < 0.25% for gravimetric point count depending on the processed sample weight and points counted.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,



Tianbao Bai, Ph.D., CIH  
Laboratory Director



CEI

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**ASBESTOS ANALYTICAL REPORT**  
**By: Polarized Light Microscopy**

Prepared for

**Emerald Environmental**

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CLIENT PROJECT: 38848, 211 Moody Ave. SW.

LAB CODE: B243579B

TEST METHOD: PLM Gravimetric Point Count  
EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 03/04/24



CEI

# ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

**Client:** Emerald Environmental  
1621 Saint Clair Ave  
Kent, OH 44240

**Lab Code:** B243579B  
**Date Received:** 02-29-24  
**Date Analyzed:** 03-04-24  
**Date Reported:** 03-04-24

**Project:** 38848, 211 Moody Ave. SW.

## ASBESTOS GRAVIMETRIC POINT COUNT PLM, EPA 600 METHOD

Client ID Lab ID	Material Description	Sample Weight (g)	Organic Material (%)	Acid Soluble Material (%)	Acid Insoluble Material (%)	ASBESTOS %	
<b>211-0216-47</b> B243579.046	Mastic	0.4	51	.25	49	<b>0.24%</b>	<b>Chrysotile</b>
Samples B243579.046, B243579.046 and B243579.080 analyzed by N. Moore.							
<b>211-0216-48</b> B243579.047	Mastic	0.457	50	7.1	43	<b>0.11%</b>	<b>Chrysotile</b>
<b>211-0216-80</b> B243579.049 B	Adhesive	0.282	49	9.2	41	<b>0.63%</b>	<b>Chrysotile</b>
<b>211-0219-106</b> B243579.105	Chalkboard Mastic	0.275	27	26	47	<b>0.35%</b>	<b>Chrysotile</b>
Samples B243579.105 & B243579.106 analyzed by J. Morgan							
<b>211-0219-107</b> B243579.106	Chalkboard Mastic	0.334	4.2	48	47	<b>0.24%</b>	<b>Chrysotile</b>

FOR REFERENCE ONLY

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**LEGEND:** None

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**METHOD:** EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

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**REPORTING LIMIT:** Varies with the weight and constituents of the sample (<0.25%)

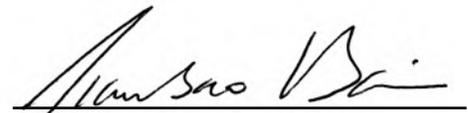
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**REGULATORY LIMIT:** >1% by weight

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This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. *Estimated measurement of uncertainty is available on request.* This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID, location, volume and area as well as date and time of sampling.

**ANALYST:**  
Nicholas Moore**APPROVED BY:**  
Tianbao Bai, Ph.D., CIH  
Laboratory Director  
Jacob Morgan

Item	Furnished By	Installed By	Backing System	Comments
<b>General Items</b>				
Artwork	Owner	Owner	-	
Casework	Contractor	Contractor	Strap Backing Plate	
Clocks	Owner	Contractor	No	Contractor to confirm locations prior to install
Clocks (Digital)	Owner	Contractor	No	Contractor provides power connection
Coat Hooks	Contractor	Contractor	No	
Dishwashers	Owner	Owner	-	
Door Stops	Contractor	Contractor	Wood Blocking	
Employee Time Clocks	Owner	Owner	No	Contractor provides wall recess & power/ data connections
Fire Extinguisher in Cabinet	Owner	Contractor	No	Fire Extinguisher Cabinets by Contractor
Fire Extinguisher - Wall Mounted	Owner	Contractor	Wood Blocking	
Furniture Desks and Chairs	Owner	Owner	-	Part of furniture package
Furniture Modular Systems	Owner	Owner	No	Part of furniture package; connections will need to be made by Contractor.
Grab Bars	Contractor	Contractor	Wood Blocking	
Infant Changing Station	Contractor	Contractor	Wood Blocking	
Marker / White Boards	Owner	Owner	No	
Microwaves	Owner	Owner	-	
Monitor w/ Bracket - Wall Mounted	Owner	Contractor	Wood Blocking	Assembled and installed by Contractor
Mop Rack	Contractor	Contractor	No	
Paper Towel Dispensers	Contractor	Contractor	No	
Refrigerators	Owner	Owner	-	Connection to ice maker made by Contractor
Security Toilet Accessories	Contractor	Contractor	Wood Blocking	Refer to specific items for blocking requirements
Soap Dispensers	Contractor	Contractor	No	
Signage	Owner	Owner	-	
Telephone	Owner	Owner	-	
Toilet Paper Dispensers	Contractor	Contractor	No	
Toilet Seat Cover Dispensers	Contractor	Contractor	No	
Trash Cans	Owner	Owner	No	
TV w/ Bracket - Wall Mounted	Contractor	Contractor	Wood Blocking	Assembled and installed by Contractor
Window Shades	Contractor	Contractor	Wood Blocking	
Water Dispensers	Owner	Owner	No	Contractor provides plumbing connection
Wall Protection	Contractor	Contractor	Strap Backing Plate	

SECTION 011400  
WORK RESTRICTIONS

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. This Section includes information relating to work restrictions.

1.3 GENERAL

- A. General: Contractor shall have limited use of premises for construction operations. Coordinate all Work with the Owner.
- B. Use of Site: Do not disturb portions of Project site beyond areas in which the Work is indicated. Confine construction operations to immediate Project area.
  - 1. Allow for Owner occupancy of Project site and use by the public.
- C. Building Protection: Maintain existing building in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.

1.4 DELIVERIES/EXISTING DRIVES

- A. Driveways and Entrances: Keep driveways, loading areas, and entrances service premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
  - 1. Schedule deliveries to minimize use of driveways and entrances.
  - 2. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
  - 3. All deliveries must be received by Contractor personnel. Owner will not accept deliveries.

1.5 OWNER'S EXISTING PARKING AREAS

- A. Existing parking areas of the Owner's facility may be used for construction personnel parking. Coordinate with the Owner, the location and limits of existing parking areas available for use by construction personnel.

1.6 ALLOWABLE WORK HOURS

- A. Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Saturday, unless otherwise indicated.

1.7 EXISTING STAIR

- A. 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.

1.8 EXISTING FACILITY USE

- A. Contractor personnel shall not enter the existing facility except to perform work required by the Contract.
- B. Toilet Facilities: Use is permitted.

1.9 SMOKING

- A. Smoking is not permitted within the project area, building or outside on the property.

1.10 OWNER PROTOCOLS

- A. Abide by all Owner protocols regarding construction activities on site. Participate in training sessions if applicable.

1.11 OWNER'S OCCUPANCY REQUIREMENTS

- A. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
  - 1. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
  - 2. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems service occupied portions of building.
  - 3. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.



PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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. This 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 additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.
- B. Types of allowances include the following as applicable:
  - 1. Lump-sum allowances.
  - 2. Contingency allowances.
  - 3. Testing and inspecting allowances.
- C. Related Sections include the following:
  - 1. Divisions 02 through 33 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

- A. At the earliest practical date after award of the Contract, 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. 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 LUMP-SUM, UNIT-COST AND QUANTITY ALLOWANCES

- A. Allowance shall include cost to Contractor of specific products and materials under allowance and shall include taxes, freight, and delivery to Project site.
- B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 CONTINGENCY ALLOWANCES

- A. Use the contingency 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 contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
- C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.
- D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.8 TESTING AND INSPECTING ALLOWANCES

- A. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.
- B. The allowance does not include incidental labor required to assist the testing agency or costs for retesting if previous tests and inspections result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.
- C. Costs of services not required by the Contract Documents are not included in the allowance.
- D. At Project closeout, credit unused amounts remaining in the testing and inspecting allowance to Owner by Change Order.

1.9 ADJUSTMENT OF ALLOWANCES

- A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-

in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

#### 1.10 UNUSED MATERIALS

A. Return unused materials purchased under an allowance to manufacturer or supplier for credit to Owner, after installation has been completed and accepted.

1. If requested by Architect, prepare unused material for storage by Owner when it is not economically practical to return the material for credit. If directed by Architect, deliver unused material to Owner's storage space. Otherwise, disposal of unused material is Contractor's responsibility.

#### 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: Include a contingency allowance of \$50,000 for use according to Owner's instructions.

- B. Allowance No. 2: Include a contingency allowance of \$30,000 for existing panelboard testing and repair along with testing the portable generator before and after relocation.

END OF SECTION

SECTION 012300

ALTERNATES

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. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1:

1. Base Bid: No work in Room 171 – EOC, Room 172 – Waiting, Room 173 – Reception, Room 174 – Office, Room 175 Corridor, and Room 176 – Vestibule. No work related to relocation of generator included in base bid.
2. Alternate: All work as shown in Room 171 – EOC, Room 172 – Waiting, Room 173 – Reception, Room 174 – Office, Room 175 Corridor, and Room 176 – Vestibule, including mechanical, electrical, and plumbing work. Relocation of generator and chain link fencing and gate included in alternate.

B. Alternate No. 2:

1. Base Bid: No fabric canopy at entrance to Waiting 121.
2. Alternate: Provide fabric canopy at entrance to Waiting 121 as indicated on construction documents.

C. Alternate No. 3:

1. Base Bid: Existing boiler plant to remain.
2. Alternate: Replacement of boiler plant as indicated on construction documents.

END OF SECTION

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 after contract award.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
  - 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 in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify 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 CSI Form 13.1A.
  - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
    - a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
    - b. Coordination 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 substitution 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. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
- h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
- i. Research reports evidencing compliance with building code in effect for Project.
- j. Detailed comparison of Contractor's construction schedule using proposed substitution 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.
- k. Cost information, including a proposal of change, if any, in the Contract Sum.
- l. 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.
- m. 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.

## 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.

## PART 2 - PRODUCTS

### 2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 21 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. Requested substitution provides sustainable design characteristics that specified product provided.
    - c. Substitution request is fully documented and properly submitted.
    - d. Requested substitution will not adversely affect Contractor's construction schedule.
    - e. Requested substitution has received necessary approvals of authorities having jurisdiction.

- f. Requested substitution is compatible with other portions of the Work.
  - g. Requested substitution has been coordinated with other portions of the Work.
  - h. Requested substitution provides specified warranty.
  - i. 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: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed.
- 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. Requested substitution provides sustainable design characteristics that specified product provided.
    - e. Substitution request is fully documented and properly submitted.
    - f. Requested substitution will not adversely affect Contractor's construction schedule.
    - g. Requested substitution has received necessary approvals of authorities having jurisdiction.
    - h. Requested substitution is compatible with other portions of the Work.
    - i. Requested substitution has been coordinated with other portions of the Work.
    - j. Requested substitution provides specified warranty.
    - k. 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 3 - EXECUTION (Not Used)

END OF SECTION

# SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)



PROJECT: \_\_\_\_\_ SUBSTITUTION REQUEST NUMBER: \_\_\_\_\_  
\_\_\_\_\_  
FROM: \_\_\_\_\_  
TO: \_\_\_\_\_ DATE: \_\_\_\_\_  
\_\_\_\_\_  
A/E PROJECT NUMBER: \_\_\_\_\_  
RE: \_\_\_\_\_ CONTRACT FOR: \_\_\_\_\_

SPECIFICATION TITLE: \_\_\_\_\_ DESCRIPTION: \_\_\_\_\_  
SECTION: \_\_\_\_\_ PAGE: \_\_\_\_\_ ARTICLE/PARAGRAPH: \_\_\_\_\_

PROPOSED SUBSTITUTION: \_\_\_\_\_  
MANUFACTURER: \_\_\_\_\_ ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_  
TRADE NAME: \_\_\_\_\_ MODEL NO.: \_\_\_\_\_  
INSTALLER: \_\_\_\_\_ ADDRESS: \_\_\_\_\_ PHONE: \_\_\_\_\_  
HISTORY:  New Product  1-4 years old  5-10 years old  More than 10 years old  
DIFFERENCES BETWEEN PROPOSED SUBSTITUTION AND SPECIFIED PRODUCT: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Point-by-point comparative data attached — REQUIRED BY A/E

REASON FOR NOT PROVIDING SPECIFIED ITEM: \_\_\_\_\_  
\_\_\_\_\_

## SIMILAR INSTALLATION:

PROJECT: \_\_\_\_\_ ARCHITECT: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_ OWNER: \_\_\_\_\_  
DATE INSTALLED: \_\_\_\_\_

PROPOSED SUBSTITUTION AFFECTS OTHER PARTS OF WORK:  No  Yes; explain \_\_\_\_\_  
\_\_\_\_\_

## SAVINGS TO OWNER FOR ACCEPTING SUBSTITUTION:

PROPOSED SUBSTITUTION CHANGES CONTRACT TIME:  No  Yes [Add] [Deduct] \_\_\_\_\_ days.

SUPPORTING DATA ATTACHED:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_

CONTINUE ON NEXT PAGE

# SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase—  
Continued)



The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

**SUBMITTED BY:** \_\_\_\_\_

**SIGNED BY:** \_\_\_\_\_

**FIRM:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**Attachments**

**A/E's REVIEW AND RECOMMENDATION:**

- Approve Substitution—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.
- Approve Substitution as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures.
- Reject Substitution—Use specified materials.
- Substitution Request received too late—Use specified materials.

**SIGNED BY:**

**DATE:**

**OWNER'S REVIEW AND ACTION:**

- Substitution approved—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures. Prepare Change Order
- Substitution approved as noted—Make submittals in accordance with Specification Section 01 33 00 Submittal Procedures. Prepare Change Order.
- Substitution rejected—Use specified materials.

**SIGNED BY:**

**DATE:**

**ADDITIONAL COMMENTS:**       Contractor     Subcontractor     Supplier     Manufacturer     A/E

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. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS

- A. Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
  - 2. Within 10 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change. Failure to submit a reply within 10 days indicates acceptance of the work with no change in contract cost or time.
    - 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.

- B. Proposal Request Form: AIA Document G709.

1.5 CONSTRUCTION CHANGE DIRECTIVE

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

1.6 CHANGE ORDER

- A. Architect may issue a Change Order on AIA Document G701 for changes in the Work to adjust the Contract Sum or the Contract Time.
  - 1. Owner's approval of a Proposal Request.
  - 2. Owner's and Contractor's agreed upon change to Contract Sum or Contract Time of a Construction Change Directive.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

- 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

- a. Application for Payment forms with Continuation Sheets.
- b. Submittals Schedule.
- c. Contractor's Construction Schedule.

- 2. Submit the Schedule of Values to Architect at earliest possible date but no later than ten days before the date scheduled for submittal of initial Applications for Payment.

- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Use AIA Document G702 and AIA Document G703 Continuation Sheets. Alternate forms containing same information as AIA documents are acceptable subject to approval of Architect.

- 1. Schedule of Values Format: A sample Schedule of values format has been included at the end of this section for reference by the Contractor. This form represents the minimum "Schedule of Values" submittal requirements for the work breakdown of each Contract. Prior to submitting the "Schedule of Values" for approval, the Contractor will be required to refine this list to specifically relate only those items that pertain to the Work of the Contract. Be advised that the Owner and Architect reserve the right to modify existing and/or add additional categories and subcategories during the review and approval process. Labor and/or Material Costs must be completed for each category line item applicable to the Work of the Contract.

- 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

- a. Item Number.
- b. Related Specification Section or Division.
- c. Description of the Work.

- 1) When the Work occurs in multiple phases or on multiple levels and elevations include separate line items or subcategories for the Description of the Work by Area, Floor or Building Elevation.
- d. Dollar value of Labor associate with item.
- e. Dollar value of Material associated with item.
- f. Dollar value of Schedule Value Total.
- 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents.
4. Provide several line items for Bonds, Insurances, Mobilization, Permits and Fees, Coordination Drawings, Submittals, Supervision, Punch List activities, Attic Stock Materials, Operation and Maintenance manuals, Project Record Documents (As-built drawings), and Demonstration and Training Sessions.
5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
  - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Temporary Facilities and Controls: Provide a separate line item in the Schedule of Values for each.
9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

#### 1.4 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
  1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement. Detailed submittal requirements will be coordinated with the Owner.
- C. 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 of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- D. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect. One copy shall include waivers of lien and similar attachments if required.
- E. Waivers of Mechanic's Lien:
1. Each Prime Contractor shall submit with each Application for Payment a "Conditional Waiver and Release on Progress Payment for use by Prime Contractors" for the value of the current payment value requested.
  2. During the course of the Project, the Owner at their discretion, may request final waiver information from subcontractors and suppliers associated with items indicated as complete on the pay application.
  3. Waiver Forms: Submit waivers of lien and affidavit's of payment on forms, executed in a manner acceptable to Owner.
  4. Refer to Division 00 Section "Lien Waivers" for Owner-required lien waiver instructions and forms to be utilized.
- F. 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 and their corresponding work from the Schedule of Values.
  2. Schedule of Values.
  3. Contractor's Construction Schedule.
  4. Submittals Schedule.
  5. Copies of building permits including permits relating to MEP work.
  6. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  7. Certificates of insurance and insurance policies.
  8. Performance and payment bonds.
  9. Data needed to acquire Owner's insurance.
- G. Application for Payment at Substantial Completion: After receipt of the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
  2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- H. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
  5. Release of liens on Owner's required forms. Refer to Division 00 Section "Lien Waivers" for Owner-required lien waiver instructions and forms to be utilized.
  6. AIA Document G707, "Consent of Surety to Final Payment", if applicable.

7. Evidence that claims have been settled.
8. Final, liquidated damages settlement statement, if applicable.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

- A. See attached example of Contractors Schedule of Values Form.

END OF SECTION

<b>Example "Schedule of Values (SOV)" Form</b>					
<b>CONTRACT ITEMS</b>			<b>SCHEDULE OF VALUES</b>		
<b>Item #</b>	<b>Spec Section</b>	<b>Description</b>	<b>Labor</b>	<b>Material</b>	<b>Scheduled Value Total</b>
<b>DIVISION 1 - GENERAL REQUIREMENTS</b>					
	001000	Construction Contingency			
	001800	Insurances and Bonds			
		General Liability			
		Builder's Risk (if applicable)			
		Bonds (if applicable)			
		Performance / Payment Bonds			
	002010	Direct Personal Expense - Construction Staffing			
	002020	Permits and Fees			
		Building Permit			
	002040	Direct Expenses			
	012100	Allowances			
	013110	Coordination Drawings			
		MEP/T Systems			
	013200	Project Scheduling			
	014000	Quality Requirements			
		Mechanical Test and Balance (if not included in Mechanical)			
	015000	Temporary Facilities and Controls			
		Temporary Heat & Fuel, Ventilation and Humidity Control			
		Dumpsters for all Construction Debris			
		Daily Clean-Up			
		Final Clean-up			
	017329	Cutting and Patching (if not included in another trades work scope)			
	017700	Closeout Procedures			
		Punch List Activities			
	017823	Operation and Maintenance Data (Manuals)			
	017839	Project Record Documents (As-Builts Drawings)			
	017900	Demonstration and Training			
<b>DIVISION 2 - EXISTING CONDITIONS</b>					
	024100	Demolition			
	024119	Selective Demolition			
<b>DIVISION 3 - CONCRETE</b>					
	035416	Hydraulic Cement Underlayment (by floor and/or area)			
<b>DIVISION 4 - MASONRY</b>					
	042000	Unit Masonry (by floor)			

Item #	Spec Section	Description	Labor	Material	Scheduled Value Total
<b>DIVISION 5 - METALS</b>					
	053100	Steel Decking			
		Composite Metal Decking (by floor)			
	054000	Cold-Formed Metal Framing (by elevation and/or area)			
	055000	Miscellaneous Metal Fabrications			
	055113	Metal Pan Stairs			
	055213	Pipe and Tube Railings			
<b>DIVISION 6 - WOOD AND PLASTICS</b>					
	061053	Miscellaneous Rough Carpentry			
		Interior Wood Blocking / Backing (by floor or area)			
	064000	Interior Architectural Woodwork			
		Cabinets and Countertops (by floor and/or area)			
<b>DIVISION 7 - THERMAL AND MOISTURE PROTECTION</b>					
	078413	Penetration Firestopping (by floor and/or by area)			
	078446	Joint Firestopping (by floor and/or by elevation)			
	079200	Joint Sealants (by sealant type - JS-'X')			
<b>DIVISION 8 - DOORS AND WINDOWS</b>					
	080000	Door Schedule Information			
	081113	Hollow Metal Doors, Frames, and Hardware			
		Hollow Metal Frames (by floor)			
		Hollow Metal Doors (by floor, includes door hardware)			
	081416	Flush Wood Doors and Hardware			
		Flush Wood Doors (by floor, includes door hardware)			
	084113	Aluminum-Framed Entrances and Storefronts			
		Interior Hollow Metal / Wood Door Glazing			
<b>DIVISION 9 - FINISHES</b>					
	092216	Non-Structural Metal Framing (by floor and/or by area)			
	092900	Gypsum Board (by floor and/or by area)			
		Interior Sound Attenuation Insulation (by floor and/or by area)			
	093013	Ceramic Tiling			
	095113	Acoustical Panel Ceilings			
		Grid (by floor and by each grid type)			
		Ceiling Tiles (by floor and by each ceiling tile type)			
	096513	Resilient Base and Accessories			
	096519	Resilient Tile Flooring			
		Floor Preparation (by floor)			
		Resilient Tile (by floor and by each finish tag)			
	096816	Tile Carpeting			
		Floor Preparation (by floor)			
		Tile Carpeting (by floor and by each finish tag)			
	099113	Exterior Painting (by elevation or by each element)			
	099123	Interior Painting (by floor / area)			

Item #	Spec Section	Description	Labor	Material	Scheduled Value Total
<b>DIVISION 10 - SPECIALTIES</b>					
	102800	Toilet, Bath, and Laundry Accessories (by floor and by each type)			
	104413	Fire Extinguisher Cabinets (by floor and by type)			
<b>DIVISION 11 - EQUIPMENT</b>					
<b>DIVISION 12 - FURNISHINGS</b>					
<b>DIVISION 13 - SPECIAL CONSTRUCTION</b>					
<b>DIVISION 14 - CONVEYING SYSTEMS</b>					
<b>DIVISION 21 - FIRE SUPPRESSION</b>					
	210000	Fire Suppression - General			
<b>DIVISION 22 - PLUMBING</b>					
	220000	Plumbing - General			
		Permits			
		Identification and Labeling			
		Disinfection			
		Testing, Balancing, and Adjusting / Closeout			
		Sanitary Waste and Vent Piping			
		Underground			
		Rough-in (by each floor)			
		Domestic Water Piping and Specialties			
		Equipment - Hot Water Heaters / Boilers			
		Underground (if applicable)			
		Rough-in (by each floor)			
		Plumbing Insulation (by each floor)			
		Plumbing Fixtures (by each floor)			
		Natural Gas Systems			
		Meters and Meter Setting Accessories			
		Rough-in (by each floor)			
		Connections to Equipment			
		Painting (exposed gas piping if not included in painting scope of work)			

Item #	Spec Section	Description	Labor	Material	Scheduled Value Total
<b>DIVISION 23 - HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) - MECHANICAL</b>					
	230000	HVAC (Mechanical) - General			
		Coordination Drawings			
		Identification and Labeling			
		Ductwork Pressure Testing			
		HVAC System 'Testing, Balancing, and Adjusting / Closeout			
		Equipment and Piping Identification – HVAC			
		Hydronic Piping, Valves, and Specialties			
		HVAC Piping and connections to equipment (by floor)			
		HVAC Insulation (by floor)			
		Radiant Heat Panels			
		Cabinet Unit Heaters			
		Metal Ductwork / Air Inlets and Outlets			
		Shaft Ductwork Mains (for each AHU or RTU)			
		HVAC Shaft Ductwork Insulation (for each AHU or RTU)			
		Supply, Return, and Exhaust branch ductwork (by floor)			
		HVAC Brach Ductwork Insulation (by floor)			
		Diffusers and Grilles (by floor)			
		Breeches and Vents			
		HVAC Equipment			
		Boilers			
		AHU's			
		Exhaust Fans (including curbs)			
		Terminal Units (VAV / CV) / Fan Powered Boxes (FPB)			
		Instrumentation and Control for HVAC			
		Headend Equipment			
		Temperature Control Rough-in (by floor)			
		T-stat and Sensors (by floor)			
		Programming			
		System Start-up / Testing / Verification			

Item #	Spec Section	Description	Labor	Material	Scheduled Value Total
<b>DIVISION 26 - ELECTRICAL</b>					
	260000	Electrical - General			
		Permits			
		Temporary Electrical Service (if not included in General Requirements)			
		Temporary Power and Lighting (if not included in General Requirements)			
		Identification and Labeling			
		Electrical Distribution			
		Equipment / Gear			
		Panelboards (by floor)			
		Disconnect Switches / Fuses (by floor)			
		Conduit (by floor)			
		Feeders / Wire (by floor)			
		Branch Circuits - Power / Lighting			
		Devices (by floor)			
		Light Fixtures (by floor)			
		Lighting Controls			
		Connections to Mechanical Equipment (by floor)			
<b>DIVISION 27 - COMMUNICATIONS</b>					
	271000	Communications Systems			
	272000	Voice / Data Systems			
		Rough-in (by floor)			
	274000	Audio-Visual Systems			
		Rough-in (by floor)			
<b>DIVISION 28 - ELECTRONIC SAFETY AND SECURITY</b>					
	281000	Access Control			
		Rough-in (by floor)			
	282000	Video Surveillance			
		Rough-in (by floor)			
	283000	Security Detection, Alarm, and Monitoring			
		Rough-in (by floor)			
	284600	Fire Alarm System			
		Permit			
		Engineering			
		Rough-in (by floor)			
		Equipment Panels / Hardware			
		Devices (by floor)			
<b>DIVISION 31 - EARTHWORK</b>					
<b>DIVISION 32 - EXTERIOR IMPROVEMENTS</b>					
	321313	Concrete Pavement			
	321600	Concrete Curbs, Walks, and Curb Ramps			
	323113	Chain Link Fences & Gates			
	329000	Plantings			
	329200	Lawns and Grasses			
<b>DIVISION 33 - UTILITIES</b>					
			Totals		

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. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. Administrative and supervisory personnel.
  - 2. Project meetings.
  - 3. Requests for Interpretation (RFIs).
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

1.3 DEFINITIONS

- A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.
- B. Autodesk Build: The web based project information management system provided by the Architect that enables transfer of files to and from another computer via standard Internet protocols. The site is a secure, dedicated server within which internal and external users are able to access files and processes. Access levels to the software are granted and controlled by the Architect.

1.4 COORDINATION

- A. 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.
- B. Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.



3. Make adequate provisions to accommodate items scheduled for later installation.
  4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- C. 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.
- D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and 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.
  9. Project closeout activities.
- E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

#### 1.5 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

- A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.
1. Include special personnel required for coordination of operations with other contractors.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

#### 1.6 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
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. All 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. Tentative construction schedule.
    - b. Phasing.
    - c. Critical work sequencing and long-lead items.
    - d. Designation of key personnel and their duties.
    - e. Procedures for processing field decisions and Change Orders.
    - f. Procedures for RFIs.
    - g. Procedures for testing and inspecting.
    - h. Procedures for processing Applications for Payment.
    - i. Distribution of the Contract Documents.
    - j. Submittal procedures.
    - k. LEED requirements, if applicable.
    - l. Preparation of Record Documents.
    - m. Use of the premises and existing building, if applicable.
    - n. Work restrictions.
    - o. Owner's occupancy requirements.
    - p. Responsibility for temporary facilities and controls.
    - q. Construction waste management and recycling.
    - r. Parking availability.
    - s. Office, work, and storage areas.
    - t. Equipment deliveries and priorities.
    - u. First aid.
    - v. Security.
    - w. Progress cleaning.
    - x. Working hours.
  3. Minutes: Record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires 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 all entities 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. The Contract Documents.
  - b. Options.
  - c. Related RFIs.
  - d. Related Change Orders.
  - e. Purchases.
  - f. Deliveries.
  - g. Submittals.
  - h. Review of mockups.
  - i. Possible conflicts.
  - j. Compatibility problems.
  - k. Time schedules.
  - l. Weather limitations.
  - m. Manufacturer's written recommendations.
  - n. Warranty requirements.
  - o. Compatibility of materials.
  - p. Acceptability of substrates.
  - q. Temporary facilities and controls.
  - r. Space and access limitations.
  - s. Regulations of authorities having jurisdiction.
  - t. Testing and inspecting requirements.
  - u. Installation procedures.
  - v. Coordination with other work.
  - w. Required performance results.
  - x. Protection of adjacent work.
  - y. 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 parties who should have been present.
  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: Conduct progress meetings as determined by Owner or Architect.
1. Attendees: In addition to representatives of Owner and Architect, each 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 conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. 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.
    - 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) Deliveries.
  - 5) Off-site fabrication.
  - 6) Access.
  - 7) Site utilization.
  - 8) Temporary facilities and controls.
  - 9) Work hours.
  - 10) Hazards and risks.
  - 11) Progress cleaning.
  - 12) Quality and work standards.
  - 13) Status of correction of deficient items.
  - 14) Field observations.
  - 15) RFIs.
  - 16) Status of proposal requests.
  - 17) Pending changes.
  - 18) Status of Change Orders.
  - 19) Pending claims and disputes.
  - 20) Documentation of information for payment requests.
3. Minutes: Record and distribute meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
  - 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.
- E. Coordination Meetings: Conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
  1. Attendees: Each 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 conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined 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.
    - b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
    - c. Review present and future needs of each contractor present, including the following:

- 1) Interface requirements.
  - 2) Sequence of operations.
  - 3) Status of submittals.
  - 4) Deliveries.
  - 5) Off-site fabrication.
  - 6) Access.
  - 7) Site utilization.
  - 8) Temporary facilities and controls.
  - 9) Work hours.
  - 10) Hazards and risks.
  - 11) Progress cleaning.
  - 12) Quality and work standards.
  - 13) Change Orders.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
- a. Distribute recorded meeting results to Owner representative and the Architect.

#### 1.7 REQUESTS FOR INTERPRETATION (RFIs)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI to the Architect.
1. RFIs shall originate with Contractor.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
1. Drawing number and detail references, as appropriate.
  2. Field dimensions and conditions, as appropriate.
  3. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  4. Electronic Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
- a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
- C. RFI Format:
1. Electronically submit all RFIs through Autodesk Build.
  2. Attachments shall be uploaded and attached to the RFI prepared by the Contractor via Autodesk Build with attachments.
- D. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow five working days minimum for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:

- a. Requests for approval of submittals.
  - b. Requests for approval of substitutions.
  - c. Requests for coordination information already indicated in the Contract Documents.
  - d. Requests for adjustments in the Contract Time or the Contract Sum.
  - e. Requests for interpretation of Architect's actions on submittals.
  - f. Requests for electronic files (CAD, PDF, etc.)
  - g. Incomplete RFIs or RFIs with numerous errors.
2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
  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 Division 01 Section "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 the time frame indicated in the General Conditions.
- E. On receipt of Architect's action, immediately distribute the RFI response to affected parties. Review response and notify Architect within three days if Contractor disagrees with response.
- F. RFI Log: All open and closed RFIs will be logged via Autodesk Build and available for viewing by all Project Team Members.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

**REQUEST FOR INFORMATION**

**R.F.I. NO.** \_\_\_\_\_

**Project:** Carroll County Board of Commissioners  
Carroll County Office Renovation

**Project No.** 24013.000

**Architect:** Hasenstab Architects, Inc.  
Tel: (330) 434-4464, Fax: (330) 434-8546

**Date Requested:** \_\_\_\_\_

**Info Needed By:** \_\_\_\_\_

**From:**  
**Name** \_\_\_\_\_  
**Company** \_\_\_\_\_

**Copies To:**  
**Name** \_\_\_\_\_  
**Company** \_\_\_\_\_  
**Name** \_\_\_\_\_  
**Company** \_\_\_\_\_

**Information Requested:**  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**References:** **Spec Section** \_\_\_\_\_ **Drawing No.** \_\_\_\_\_ **Detail No.** \_\_\_\_\_

**Attachments:** \_\_\_\_\_

**Date Received:** \_\_\_\_\_

**Response:** \_\_\_\_\_

**Reviewed By:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Attachments:** \_\_\_\_\_

31-Jul

SECTION 013110

COORDINATION DRAWINGS

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. This Section includes administrative and procedural requirements for preparing, submitting, and approving Coordination Drawings.

1.3 DEFINITIONS

- A. Designated Contractor: Contractor identified as the contractor responsible for preparation of the final coordination drawings based on information from all other contractors and coordination participants.

- 1. The Designated Contractor for this project is the Mechanical Contractor.

- B. Coordination Participant: Contractors, Subcontractors and material suppliers who's work is relevant to the preparation of the final coordination drawings.

1.4 RELATED SECTIONS

- A. Record documents.

1.5 COORDINATION MEETINGS

- A. The Project Coordinator shall schedule and conduct coordination meetings for all Separate Contractors and appropriate Subcontractors and Material Suppliers ("Coordination Participants").

- 1. The purpose of the coordination meetings is to discuss the sequence of construction and its relationship with the approved Construction Progress Schedule; to establish the intended location of equipment, pipe, duct, conduit, and other components of the Project; and to coordinate the appropriate shared use of available construction space; especially interstitial spaces, chases and mechanical rooms; and construction storage space.

- 2. Each Coordination Participant shall be knowledgeable about the Project and the scope of its work. One individual from each Coordination Participant shall have authority to make decisions regarding the coordination process and drawings.

- 3. Each Coordination Participant shall come to the coordination meetings prepared to demonstrate and furnish documentation that it has anticipated the work of other Persons, and planned its installation. Each Coordination Participant shall coordinate its installation with the work of other persons.



4. Each Coordination Participant shall utilize documentation and information provided by other Coordination Participants to verify that the utility requirements, physical size and characteristics of planned equipment are compatible with related or connected equipment, existing or planned building components, and existing or planned utilities.
5. The Coordination Participants shall utilize the documentation and information provided by each of them in determining the actual placement and positioning of equipment and devices to avoid interference with the work of other Persons, building finishes and architectural details.
6. The Coordination Participants shall utilize the documentation and information provided by each of them to coordinate space requirements and installation considerations to maximize accessibility to equipment and devices for purposes of maintenance, repairs and replacement.
7. The Project Coordinator shall prepare a written report of each coordination meeting and distribute the report within 3 business days of the meeting to the Architect and other Coordination Participants.

## 1.6 COORDINATION DRAWINGS

- A. Prepare coordination drawings to a scale of  $\frac{1}{4}$  inch equals 1 foot 0 inch or larger, with BIM or CAD software, detailing major elements, components and systems of mechanical equipment and materials in relationship with other systems, installations, and building components. Indicate locations where sequencing and coordination of installations are of importance to the efficient flow of the Work, including (but not necessarily limited to) the following:
  1. Indicate the proposed location of piping, ductwork, equipment and materials. Include the following:
    - a. Clearances for installation and maintaining insulation.
    - b. Clearances for servicing and maintaining equipment, including filter removal, and space for equipment disassembly required for periodic maintenance.
    - c. Equipment connections and support details.
    - d. Exterior wall, roof and foundation penetrations.
    - e. Fire-rated wall and floor penetrations.
    - f. Sizes and locations of required concrete pads and bases.
    - g. Planned piping layout, including valve and specialty locations and valve stem movement.
    - h. Location and size of access doors required for access to concealed dampers, valves, and other controls.
    - i. Planned duct systems layout, including elbow radii and duct accessories.
    - j. Clearances for servicing and maintaining equipment, including space for equipment disassembly required for periodic maintenance.
    - k. Equipment service connections and support details.
  2. Indicate scheduling sequencing, movement and positioning of large equipment into or on the building during construction.
  3. Prepare floor plans, elevations, and details to indicate penetrations in floors, walls, and ceilings and their relationship to other penetrations and installations.
  4. Prepare reflected ceiling plans to coordinate and integrate installations, air outlets and inlets, light fixtures, communication systems components, sprinklers and other ceiling mounted items.
  5. Coordinate electrical and mechanical requirements of equipment. Provide necessary changes to comply with manufacturer's requirements.
  6. Construction documents are diagrammatic. Contractor shall coordinate and provide changes to accommodate minor relocation of equipment

1.7 DRAWING PROCESS

- A. Provide Preliminary Coordination Drawings to all Coordination Participants. Each Coordination Participant shall use the Preliminary Coordination Drawings as a baseline to develop drawings of its work within each applicable Coordination Area.
  - 1. Specifically locate equipment, devices, piping, conduits and other work as described and agreed at the coordination meetings.
- B. Each Coordination Participant with work within a Coordination Area shall return its drawings to the Contractor marked to show the location of the Coordination Participant's items.
  - 1. Show location of equipment, devices, piping, conduits, and other work for the Contractor's preparation of detailed and final coordination drawings ("Coordination Drawings").
- C. Any Coordination Participant with no work in any Coordination Area may return the applicable Preliminary Coordination Drawings to the Contractor with a statement on the drawings signed by an authorized representative of the Coordination Participant certifying that it has no work within that Coordination Area.
- D. The Designated Contractor shall consolidate the information for use as the final coordination drawings.
- E. After the Designated Contractor completes the Coordination Drawings, the designated Contractor shall forward a copy of the Coordination Drawings to the Coordination Participants with work within the limits of a Coordination Area and all other contractors. Submit a copy to the Architect for record purposes.
- F. Upon completion of the work, electronically update the coordination drawings with all changes associated with Construction Change Directives, Proposal Requests, Request for Information, or any other as-built revisions that have occurred throughout the duration of the project. Refer to the Project Record Documents section for submission of coordination drawings as Project Record Documents.

1.8 APPROVAL

- A. Each Participating contractor involved must sign off on final Coordination Drawings. This Signature indicates the participating contractor has reviewed and accepted the Coordination Drawings and shall complete installation as indicated on the Coordination Drawings.
- B. After Contractor's written Approval of Coordination Drawings, Contractors and all participants shall be responsible for resolving conflicts and determining the method used to resolve interferences not previously identified.
- C. Modifications required as a result of failure to resolve interferences, shall be paid for by the responsible Contractor.
- D. One (1) copy of current approved Coordination Drawings at Project Site.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 013200

CONSTRUCTION PROGRESS DOCUMENTATION

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 documenting the progress of construction during performance of the Work, including the following:
  - 1. Contractor's construction schedule.
  - 2. Construction schedule updating reports.
  - 3. Daily construction reports.
  - 4. Site condition reports.
  - 5. Special reports.
- B. Related Requirements:
  - 1. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
  - 1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
  - 2. Predecessor Activity: An activity that precedes another activity in the network.
  - 3. Successor Activity: An activity that follows another activity in the network.
- B. Cost Loading: The allocation of the schedule of values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum unless otherwise approved by Architect.
- C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- E. Event: The starting or ending point of an activity.

- F. Float: The measure of leeway in starting and completing an activity.
  - 1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
  - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
  - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.
- G. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

#### 1.4 SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:
  - 1. Two paper copies.
- B. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- C. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
  - 1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
  - 2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
  - 3. Total Float Report: List of all activities sorted in ascending order of total float.
  - 4. Earnings Report: Compilation of Contractor's total earnings from the Notice to Proceed until most recent Application for Payment.
- D. Construction Schedule Updating Reports: Submit with Applications for Payment and as required to reflect an accurate account of the construction activities.
- E. Daily Construction Reports: Submit when requested by Architect or Owner.
- F. Site Condition Reports: Submit at time of discovery of differing conditions.
- G. Special Reports: Submit at time of unusual event.

#### 1.5 QUALITY ASSURANCE

- A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect's request.
- B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's construction schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.
2. Verify availability of qualified personnel needed to develop and update schedule.
3. Discuss constraints, including phasing, work stages, area separations, interim milestones and partial Owner occupancy.
4. Review delivery dates for Owner-furnished products.
5. Review schedule for work of Owner's separate contracts.
6. Review submittal requirements and procedures.
7. Review time required for review of submittals and resubmittals.
8. Review requirements for tests and inspections by independent testing and inspecting agencies.
9. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
10. Review and finalize list of construction activities to be included in schedule.
11. Review procedures for updating schedule.

#### 1.6 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
  1. Secure time commitments for performing critical elements of the Work from entities involved.
  2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

### PART 2 - PRODUCTS

#### 2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice of Award to date of final completion.
  1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each story or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
  1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
  2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  3. Submittal Review Time: Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
  4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.

5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
  6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Phasing: Arrange list of activities on schedule by phase.
  2. Work under More Than One Contract: Include a separate activity for each contract.
  3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.
  4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
  6. Work Restrictions: Show the effect of the following items on the schedule:
    - a. Coordination with existing construction.
    - b. Limitations of continued occupancies.
    - c. Uninterruptible services.
    - d. Partial occupancy before Substantial Completion.
    - e. Use of premises restrictions.
    - f. Provisions for future construction.
    - g. Seasonal variations.
    - h. Environmental control.
  7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
    - a. Subcontract awards.
    - b. Submittals.
    - c. Purchases.
    - d. Fabrication.
    - e. Sample testing.
    - f. Deliveries.
    - g. Installation.
    - h. Tests and inspections.
    - i. Adjusting.
    - j. Curing.
    - k. Building flush-out.
    - l. Startup and placement into final use and operation.
  8. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
    - a. Temporary space conditioning.
    - b. Completion of mechanical installation.
    - c. Completion of electrical installation.
    - d. Substantial Completion.

- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion, and the following interim milestones:
  - 1. Temporary enclosure and space conditioning.
- E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
  - 1. Submit when requested by Architect or Owner.
- F. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, and equipment required to achieve compliance, and date by which recovery will be accomplished.
- G. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

## 2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Utilize Gantt-Chart schedule for smaller and less complex projects only when approved by Architect.
- B. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's construction schedule within 30 days of date established for commencement of the Work. Base schedule on the startup construction schedule and additional information received since the start of Project.
- C. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
  - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

## 2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (CPM SCHEDULE)

- A. General: Prepare network diagrams using AON (activity-on-node) format.
- B. Startup Network Diagram: When requested, submit diagram within 14 days of date established for commencement of the Work. Outline significant construction activities for the first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.
- C. CPM Schedule: Prepare Contractor's construction schedule using a time-scaled CPM network analysis diagram for the Work.
  - 1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than 30 days after date established for commencement of the Work.



- a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect's approval of the schedule.
  2. Conduct educational workshops to train and inform key Project personnel, including subcontractors' personnel, in proper methods of providing data and using CPM schedule information.
  3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
  4. Use "one workday" as the unit of time for individual activities. Indicate nonworking days and holidays incorporated into the schedule in order to coordinate with the Contract Time.
- D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the startup network diagram, prepare a skeleton network to identify probable critical paths.
1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:
    - a. Preparation and processing of submittals.
    - b. Mobilization and demobilization.
    - c. Purchase of materials.
    - d. Delivery.
    - e. Fabrication.
    - f. Utility interruptions.
    - g. Installation.
    - h. Work by Owner that may affect or be affected by Contractor's activities.
    - i. Testing and commissioning.
    - j. Punch list and final completion.
    - k. Activities occurring following final completion.
  2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
  3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
  4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
    - a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.
  5. Cost- and Resource-Loading of CPM Schedule: Assign cost to construction activities on the CPM schedule. Do not assign costs to submittal activities. Assign costs under main subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project record documents, LEED documentation, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
    - a. Each activity cost shall reflect an appropriate value subject to approval by Architect.
    - b. Total cost assigned to activities shall equal the total Contract Sum.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using a network fragment to demonstrate the effect of the proposed change on the overall project schedule.

- F. Initial Issue of Schedule: Prepare initial network diagram from a sorted activity list indicating straight "early start-total float." Identify critical activities. Prepare tabulated reports showing the following:
1. Contractor or subcontractor and the Work or activity.
  2. Description of activity.
  3. Main events of activity.
  4. Immediate preceding and succeeding activities.
  5. Early and late start dates.
  6. Early and late finish dates.
  7. Activity duration in workdays.
  8. Total float or slack time.
  9. Average size of workforce.
  10. Dollar value of activity (coordinated with the schedule of values).
- G. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:
1. Identification of activities that have changed.
  2. Changes in early and late start dates.
  3. Changes in early and late finish dates.
  4. Changes in activity durations in workdays.
  5. Changes in the critical path.
  6. Changes in total float or slack time.
  7. Changes in the Contract Time.
- H. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
  2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
  3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
  4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
    - a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.

## 2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
  2. List of separate contractors at Project site.
  3. Approximate count of personnel at Project site.
  4. Equipment at Project site.
  5. Material deliveries.
  6. High and low temperatures and general weather conditions, including presence of rain or snow.
  7. Accidents.
  8. Meetings and significant decisions.

9. Unusual events (see special reports).
10. Stoppages, delays, shortages, and losses.
11. Meter readings and similar recordings.
12. Emergency procedures.
13. Orders and requests of authorities having jurisdiction.
14. Change Orders received and implemented.
15. Construction Change Directives received and implemented.
16. Services connected and disconnected.
17. Equipment or system tests and startups.
18. Partial completions and occupancies.
19. Substantial Completions authorized.

- B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

## 2.5 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION SCHEDULE

- A. Prior to first application for payment, each Contractor must provide written acceptance of the construction schedule.
- B. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
  3. As the Work progresses, indicate final completion percentage for each activity.
- C. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.

2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

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 requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Requirements:
  - 1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the schedule of values.
  - 2. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
  - 3. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
  - 4. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
  - 5. Division 01 Section "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

- A. Submittals: Written and graphic information and physical samples that require responsive action. Submittals may be rejected for not complying with requirements.
- B. Autodesk Build: The web-based project information management system provided by the Architect that enables transfer of files to and from another computer via standard Internet protocols. The site is a secure, dedicated server within which internal and external users are able to access files and processes. Access levels to the software are granted and controlled by the Architect.
- C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 SUBMITTALS

- A. Submittal Schedule: Submit a schedule 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, if applicable Construction Manager 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: 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: Submit concurrently with the first complete submittal of Contractor's construction schedule.
  - a. Submit revised submittal schedule 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 and, if applicable, Construction Manager's final release or approval.
  - g. Scheduled date of fabrication.
  - h. Scheduled dates for purchasing.
  - i. Scheduled dates for installation.
  - j. Activity or event number.

#### 1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.
  1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings.
    - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
    - b. Contractor must accept the conditions stated in the Electronic File Transfer documents provided at the end of this section.
- 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. Do not submit partial submittals.
  3. Coordinate transmittal of different types of submittals for related parts of the Work 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 10 business days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required.
  2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow 10 business days for review of each resubmittal.
  4. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 business days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
- D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
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. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect and, if applicable Construction Manager.
  4. Transmittal Form for Electronic Submittals: Attach submittal in PDF format, containing the following information:
    - a. Project name.
    - b. Date.
    - c. Name and address of Architect.
    - d. Name of Construction Manager.
    - e. Name of Contractor.
    - f. Name of firm or entity that prepared submittal.
    - g. Names of subcontractor, manufacturer, and supplier.
    - h. Category and type of submittal.
    - i. Submittal purpose and description.
    - j. Specification Section number and title.
    - k. Specification paragraph number or drawing designation and generic name for each of multiple items.
      1. Drawing number and detail references, as appropriate.
    - m. Location(s) where product is to be installed, as appropriate.
    - n. Related physical samples submitted directly.
    - o. Indication of full or partial submittal.
    - p. Remarks.
  5. Metadata: Include the following information as keywords in the electronic submittal file metadata:
    - a. Project name.
    - b. Number and title of appropriate Specification Section.
    - c. Manufacturer name.
    - d. Product name.
- E. Options: Identify options requiring selection by Architect.

- F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect and, if applicable Construction Manager on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- G. 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 and, if applicable Construction Manager's action stamp.
- H. 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.
- I. 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 and, if applicable Construction Manager's or Contractor's action stamp.

## PART 2 - PRODUCTS

### 2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
  - 1. Submit electronic submittals as PDF electronic files, using the Architect's web-based project management system.
    - a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
  - 2. Assemble and submit submittals required by individual Specification Sections into single packages incorporating all submittal requirements of the individual Specification Section. Do not submit individual items required by the Specification section as separate transmittals. Where possible, submit related items of Work required by the individual Sections concurrently to allow for concurrent review.
    - a. Submittal Submissions shall comply with the following:
      - 1) Shall not include any SDS – Safety Data Sheets. Any submittals submitted containing this information will either not be reviewed and returned for resubmittal or the Safety Data Sheets will be deleted from the submittal package prior to being returned to the Construction Manager.
      - 2) All product data, install instructions, etc. information shall be the manufacturer's current most current information.
      - 3) All information must be clear and legible (scans upon scans upon scans will not be accepted). PDF's downloaded directly from the manufacturer's website are preferred.



- 4) All information shall be highlighted, checked, circled, marked, or identified in some way for the reviewer to easily determine which product, options, accessories, etc. are being proposed by the contractor.
  - 5) All questions regarding a submittal item (i.e. – shop drawings, etc.) shall be “clouded” for the reviewer to address and respond as a part of the submittal review comments.
  - 6) Any deviations from the contract documents (i.e. – dimensional changes, etc.) shall be “clouded” for the reviewer to address and respond as a part of the submittal review comments.
  - 7) Product or system specific “Shop Drawings” shall be prepared by the contractor or supplier shall be generated via a software specific to their trade. Photo copies of the Construction Documents with notes added will not be accepted.
  - 8) All product submittals shall be from a manufacturer specified in the Contract Documents for each product. Submittals from a manufacturer not specified will be rejected and returned for resubmission.
    - a) If a Contractor wishes to submit a product substitution, they may do so by contacting and completing the substitution request form provided by the Architect.
    - b) NOTE: Prior to reviewing any substitution request, the Contractor shall agree to pay for the costs of the Architect (and/or its Consultant’s) time to review any substitution request. In the event that a product specified is no longer available, the Architect’s fees will be waived.
  - 9) All product submittals shall include any corresponding equipment, device, system, etc. tags indicated in the contract documents for each product submitted (i.e.: “PL-1”, “RB-1”, “WC-1”, “TMV-1”, “PRV-1, “RP-x-x”, “VVB-x-x”, Light Fixture Identifier, Electrical Panel Tags, etc.).
  - 10) All project submittals that are electrified or require control wiring between components (i.e.: door hardware, med gas systems, etc.) must include complete, project specific wiring diagrams for these electrified products.
  - 11) All product submittals shall also contain the manufacturer’s installation instructions.
  - 12) All “physical” samples and finish and color selection product data must be submitted by the Contractor through the Architect’s Project Management Software so the submittal review process is initiated and recorded in the software application. Upload photos of the product samples being submitted.
    - a) The “physical” sample and finish color selection submittal shall be delivered concurrently to the Architect for review. Color samples will not be selected from an electronic reproduction or color chart.
3. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

## 2.2 SUBMITTALS

- 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 not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.
    - c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Availability and delivery time information.
  4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
  5. Submit Product Data before or concurrent with Samples.
- 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.
    - h. Include graphic scale on all drawings.
  2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
- C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. Provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit three sets of Samples. Architect will retain one Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record sample.
      - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- 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. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."
- F. Contractor's Construction Schedule: Comply with requirements specified in Section 013200 "Construction Progress Documentation."
- G. Application for Payment and Schedule of Values: Comply with requirements specified in Section 012900 "Payment Procedures."

- H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Section 014000 "Quality Requirements."
- I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Section 017700 "Closeout Procedures."
- J. Maintenance Data: Comply with requirements specified in Section 017823 "Operation and Maintenance Data."
- K. 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.
- L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- M. 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.
- N. 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.
- O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
- R. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.

- T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- V. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

### 2.3 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
  - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

- A. 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. Project Closeout and Maintenance Material Submittals: See requirements in Division 1 Section "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, 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.

3.2 ARCHITECT'S ACTION

- A. Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect will stamp each submittal and will mark stamp appropriately to indicate action.
- B. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- C. Submittals not required by the Contract Documents may be returned by the Architect without action.

3.3 ELECTRONIC FILE TRANSFERS

- A. See attached Electronic File Transfer forms.

END OF SECTION

**HASENSTAB ARCHITECTS, INC.**

**ELECTRONIC FILE TRANSFER TO CONTRACTOR**

**Contractor:** \_\_\_\_\_

**Project:** Carroll County Office Renovation

**Upon request, Hasenstab Architects and their consultants will provide electronic files for the Contractors convenience and use in the preparation of shop drawings related to the above mentioned project, subject to the following terms and conditions:**

Hasenstab Architects make no representation as to the compatibility of these files with the Contractors hardware or software beyond the specified release of the referenced specifications.

Data contained on these electronic files are part of Hasenstab Architect's instruments of service and shall not be used by the Contractor or anyone else receiving these data through or from the Contractor for any purpose other than as a convenience in the preparation of shop drawings for the referenced project. Any other use or reuse by the Contractor or by others will be at their sole risk and without liability or legal exposure to Hasenstab Architects and their consultants. The Contractor agrees to make no claim and hereby waives, to the fullest extent permitted by law, any claim or cause of action of any nature against Hasenstab Architects and their consultants, officers, directors, employees, agents, or sub-consultants that may arise out of or in connection with the use of the electronic files.

Furthermore, the Contractor shall, to the fullest extent permitted by law, indemnify and hold Hasenstab Architects and their consultants, harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from the Contractors use of these electronic files.

These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. Hasenstab Architects and their consultants make no representation regarding the accuracy or completeness of the electronic files received. In the event that a conflict arises between the signed or sealed hard-copy construction documents prepared by Hasenstab Architects and their consultants, and the electronic files, the signed or sealed hard-copy construction documents shall govern. The Contractor is responsible for determining if any conflict exists. By the Contractors use of these electronic files, the Contractor is not relieved of their duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate work with that of other contractors for the project. The Contractor assumes full responsibility for incorporation of all manual modifications, addenda, bulletins, clarifications and Change Orders to the Drawings.

Because information presented on the electronic files can be modified, unintentionally or otherwise, Hasenstab Architects and their consultants reserve the right to remove all indication of ownership and/or involvement from each electronic display.

Under no circumstances shall delivery of the electronic files for use by the Contractor be deemed a sale by Hasenstab Architects and their consultants, and Hasenstab Architects or their consultants make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall Hasenstab Architects and their consultants be liable for any loss of profit or any consequential damages as a result of the Contractors use or reuse of these electronic files.

ACCEPTANCE OF CONTRACTOR (Authorized Representative)

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

**HASENSTAB ARCHITECTS, INC.**

**ELECTRONIC FILE TRANSFER TO OUTSIDE AGENCY (OA)**

**Outside Agency (OA):** \_\_\_\_\_

**Project:** Carroll County Office Renovation

**Upon request, Hasenstab Architects and their consultants will provide electronic files for the Outside Agency's convenience and use related to the above mentioned project, subject to the following terms and conditions:**

Hasenstab Architects make no representation as to the compatibility of these files with the Outside Agency's hardware or software beyond the specified release of the referenced specifications.

Data contained on these electronic files are part of Hasenstab Architect's instruments of service. Use or reuse by the Outside Agency or by others will be at their sole risk and without liability or legal exposure to Hasenstab Architects and their consultants. The Outside Agency agrees to make no claim and hereby waives, to the fullest extent permitted by law, any claim or cause of action of any nature against Hasenstab Architects and their consultants, officers, directors, employees, agents, or sub-consultants that may arise out of or in connection with the use of the electronic files.

Furthermore, the Outside Agency shall, to the fullest extent permitted by law, indemnify and hold Hasenstab Architects and their consultants, harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from the Outside Agency's use of these electronic files.

These electronic files are not construction documents. Hasenstab Architects and their consultants make no representation regarding the accuracy or completeness of the electronic files received. By the Outside Agency's use of these electronic files, the Outside Agency is not relieved of their duty to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate work.

Because information presented on the electronic files can be modified, unintentionally or otherwise, Hasenstab Architects and their consultants reserve the right to remove all indication of ownership and/or involvement from each electronic display.

Under no circumstances shall delivery of the electronic files for use by the Outside Agency be deemed a sale by Hasenstab Architects and their consultants, and Hasenstab Architects or their consultants make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall Hasenstab Architects and their consultants be liable for any loss of profit or any consequential damages as a result of the Outside Agency's use or reuse of these electronic files.

ACCEPTANCE OF OUTSIDE AGENCY (Authorized Representative)

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_



HASENSTAB ARCHITECTS, INC.

ELECTRONIC FILE TRANSFER TO OWNER OR OWNER'S CONSULTANT

Recipient: \_\_\_\_\_

Project/Facility: 211 Moody Renovation

**Upon request, Hasenstab Architects and their consultants may provide electronic files for the Owner's and/or Owner's Consultants use related to the above mentioned project, subject to the following terms and conditions:**

Hasenstab Architects makes no representation as to the compatibility of these files with any hardware or software beyond the current supported versions of software for the requested data format.

Data contained on these electronic files are part of Hasenstab Architect's instruments of service. Any other use or reuse by others will be at their sole risk and without liability or legal exposure to Hasenstab Architects and their consultants. The Recipient agrees to make no claim and hereby waives, to the fullest extent permitted by law, any claim or cause of action of any nature against Hasenstab Architects and their consultants, officers, directors, employees, agents, or sub-consultants that may arise out of or in connection with the use of the electronic files.

Furthermore, the Recipient shall, to the fullest extent permitted by law, indemnify and hold Hasenstab Architects and their consultants, harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from the Recipients use of these electronic files.

These electronic files are not record documents. Differences may exist between these electronic files and corresponding hard-copy documents. Hasenstab Architects and their consultants make no representation regarding the accuracy or completeness of the electronic files received. The Recipient shall be responsible for determining if any conflict exists. The Recipients are not relieved of their duty to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate work with the as-built conditions for the project.

Because information presented on the electronic files can be modified, unintentionally or otherwise, Hasenstab Architects and their consultants reserve the right to remove all indication of ownership and/or involvement from each electronic display.

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ACCEPTANCE OF RECIPIENT (Authorized Representative)

BY: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

# Hasenstab Architects, Inc.

## SUBMITTAL / TRANSMITTAL FORM

**Project:** Carroll County Board of Commissioners  
Carroll County Office Renovation

**HAI Project No.:** 24013.000

**Architect:** Hasenstab Architects, Inc. (HAI)  
190 North Union Street, Suite #400  
Akron, Ohio 44304  
Telephone: (330) 434-4464

**Contractor:** [Company Name]  
[Company Mailing Address]  
[Company Shipping Address]  
[City, State Zip-Code]

**Attn:** Brandilyn Fry

**Attn:** [Company Contact]

Submittal - From/To:	Quantity:	Date:	Sent Via:	Complete Copy To:	Transmittal Cover Only To:

Submittal Description - Do not combine multiple submittals on single Submittal Form	Dwg. No.	Spec. Section	Mfg / Supplier / Sub-Contractor	Arch/Conslt Action	Architects Submittal No.
Times submitted (Check Box)	1 <input type="checkbox"/>	2 <input checked="" type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>

**Contractor Comments (If more room is needed for Contractor Comments, please attach a separate sheet):**

**The Contractor has reviewed and approved the attached submittal as per the requirements of the Contract Documents.**

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

**STOP: THE FOLLOWING INFORMATION IS TO BE COMPLETED BY THE ARCHITECT**

Reviewing is for general conformance with the design concept of the Project and general compliance with the Contract Documents only. The Contractor is responsible for fabrication process, techniques, confirming dimensions and quantities and the coordination of the Work of all trades. These responsibilities are delineated in complete detail in the Contract Documents.

**Architect Action:**

This material is being returned with the action indicated above (Arch/Consult Action) in accordance with the following legend:

- |                           |   |
|---------------------------|---|
| 1. No Exceptions Taken    | 5. Review Not Required                                |
| 2. Make Corrections Noted | 6. Rejected   |
| 3. Submit Specified Items | 7. Reviewed by Consultant - See attached Comments     |
| 4. Revise and Resubmit    | 8. See Architect's Comments Below (or attached sheet) |

**Architect's Comments:**

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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. This Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting 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 -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- C. Related Sections include the following:
  - 1. Division 01 Section "Statement of Special Inspections" for test and inspections required by Ohio Building Code and procured by the Owner.
  - 2. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. 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.
- B. 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. Services do not include contract enforcement activities performed by Architect.
- C. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

- D. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- E. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- F. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- H. 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, and similar operations.
  - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- I. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

#### 1.4 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

#### 1.5 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, 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.
- C. 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.
- D. 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.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
  - 1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
  - 2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.

- d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
  - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
  - f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

## 1.7 QUALITY CONTROL

- A. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. 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.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. 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 Division 01 Section "Submittal Procedures."
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Project Coordinator.

5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.
- E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- G. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.
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.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 TEST AND INSPECTION LOG

- A. 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 modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

### 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
  2. Comply with the Contract Document requirements for Division 01 Section "Cutting and Patching."
- 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



## SCHEDULE OF SPECIAL INSPECTIONS

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.		
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	AGENT*
<b>1704.2.5 Inspection of Fabricators</b>				
Verify fabrication/quality control procedures	In-plant review (3)		Periodic	
<b>1705.1.1 Special Cases</b>				
(work unusual in nature, including but not limited to alternative materials and systems, unusual design applications, materials and systems with special manufacturer's requirements)	Submittal review, shop (3) and/or field inspection <b>(List materials or systems)</b>			
<b>1705.2 Steel Construction</b>				
1. Fabricator and erector documents (Verify reports and certificates as listed in AISC 360, chapter N, paragraph 3.2 for compliance with construction documents)	Submittal Review		Each submittal	
2. Material verification of structural steel	Shop (3) and field inspection		Periodic	
3. Embedments (Verify diameter, grade, type, length, embedment. See 1705.3 for anchors)	Field inspection		Continuous	
4. Verify member locations, braces, stiffeners, and application of joint details at each connection comply with construction documents	Field inspection		Periodic	
5. Structural steel welding:				
a. Inspection tasks Prior to Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-1)	Shop (3) and field inspection		Observe or Perform as noted (4)	
b. Inspection tasks During Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-1)	Shop (3) and field inspection		Observe (4)	
c. Inspection tasks After Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-3)	Shop (3) and field inspection		Observe or Perform as noted (4)	
d. Nondestructive testing (NDT) of welded joints: See commentary				
1) Complete penetration groove welds 5/16" or greater in risk category III or IV	Shop (3) or field ultrasonic testing - 100%		Periodic	
2) Complete penetration groove welds 5/16" or greater in risk category II	Shop (3) or field ultrasonic testing - 10% of welds minimum		Periodic	
3) Thermally cut surfaces of access holes when material t > 2"	Shop (3) or field magnetic Partical or Penetrant testing		Periodic	
4) Welded joints subject to fatigue when required by AISC 360, Appendix 3, Table A-3.1	Shop (3) or field radiographic or Ultrasonic testing		Periodic	
5) Fabricator's NDT reports when fabricator performs NDT	Verify reports		Each submittal (5)	
6. Structural steel bolting:				
	Shop (3) and field inspection			

## SCHEDULE OF SPECIAL INSPECTION SERVICES

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.		
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	A
a. Inspection tasks Prior to Bolting (Observe, or perform tasks for each bolted connection, in accordance with QA tasks listed in AISC 360, Table N5.6-1)			Observe or Perform as noted (4)	
b. Inspection tasks During Bolting (Observe the QA tasks listed in AISC 360, Table N5.6-2)			Observe (4)	
1) Pre-tensioned and slip-critical joints				
a) Turn-of-nut with matching markings			Periodic	
b) Direct tension indicator			Periodic	
c) Twist-off type tension control bolt			Periodic	
d) Turn-of-nut without matching markings			Continuous	
e) Calibrated wrench			Continuous	
2) Snug-tight joints			Periodic	
c. Inspection tasks After Bolting (Perform tasks for each bolted connection in accordance with QA tasks listed in AISC 360, Table N5.6-3)			Perform (4)	
7. Inspection of steel elements of composite construction prior to concrete placement in accordance with QA tasks listed in AISC 360, Table N6.1	Shop (3) and field inspection and testing		Observe or Perform as noted (4)	
<b>1705.2.2 Steel Construction Other Than Structural Steel</b>				
1. Material verification of cold-formed steel deck:				
a. Identification markings	Field inspection		Periodic	
b. Manufacturer's certified test reports	Submittal Review		Each submittal	
2. Connection of cold-formed steel deck to supporting structure:	Shop (3) and field inspection			
a. Welding			Periodic	
b. Other fasteners (in accordance				
1) Verify fasteners are in conformance with approved submittal			Periodic	
2) Verify fastener installation is in conformance with approved submittal and manufacturer's recommendations			Periodic	
3. Reinforcing steel	Shop (3) and field inspection			
a. Verification of weldability of steel other than ASTM A706			Periodic	
b. Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, boundary elements of special concrete structural walls and shear reinforcement			Continuous	
c. Shear reinforcement			Continuous	
d. Other reinforcing steel			Periodic	

**SCHEDULE OF SPECIAL INSPECTION SERVICES**

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS	PERMIT NO.	APPLICABLE TO THIS PROJECT				
		MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT	A
<b>1705.2.3 Open-web Steel Joists and Joist Girders.</b>						
1. Installation of open-web steel joists and joist girders						
a. End connections – welding or bolted.					Periodic	
b. Bridging – horizontal or diagonal.						
1. Standard Bridging.					Periodic	
2. Bridging that differs from the SJI specifications listed in Section 2207.1.	Shop (3) and field inspection				Periodic	
<b>1705.2.4 Cold-formed Steel Trusses Panning 60 feet or greater</b>						
a. Verify temporary and permanent restraint/bracing are installed in accordance with the approved truss submittal package	Field inspection				Periodic	
<b>1705.3 Concrete Construction</b>						
1. Inspect reinforcement, including prestressing tendons and verifying placement.	Shop (3) and field inspection				Periodic	
2. Reinforcing bar welding:	Shop (3) and field inspection				Periodic	
a. Verify weldability of reinforcing bars other than ASTM A706;						
b. Inspect single-pass fillet welds, maximum 5/16"; and						
c. Inspect all other welds.						
3. Inspection anchors cast in concrete.	Shop (3) and field inspection				Continuous	
4. Inspect anchors post-installed in hardened concrete members.	Field inspection				Periodic or as required by the research report issued by an approved source	
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.						
b. Mechanical anchors and adhesive anchors not defined in 4.a.						
5. Verify use of required design mix	Shop (3) and field inspection				Periodic	
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Shop (3) and field inspection				Continuous	
7. Inspection of concrete and shotcrete placement for proper application techniques	Shop (3) and field inspection				Continuous	
8. Verify maintenance of specified curing temperature and techniques	Shop (3) and field inspection				Periodic	
9. Inspection of prestressed concrete	Shop (3) and field inspection					
a. Application of prestressing force					Continuous	
b. Grouting of bonded prestressing tendons in the seismic-force-resisting system					Continuous	
10. Inspect erection of precast concrete members.						

**SCHEDULE OF SPECIAL INSPECTION SERVICES**

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.	APPLICABLE TO THIS PROJECT	
MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT	A
		11. For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category C, D, E or F, inspect such connections and reinforcement in the field for:	Field inspection	
a. Installation of the embedded parts.				
b. Completion of the continuity of reinforcement across joints.				
c. Completion of connections in the field.				
12. Inspect installation tolerances of precast concrete diaphragm connections for compliance with ACI 550.5.	Field inspection		In accordance with Section 1705.2	
13. Verification of in-situ concrete strength, prior to stressing of tendons in post tensioned concrete and prior to removal of shores and forms from beams and structural slabs	Review field testing and laboratory reports		Periodic	
14. Inspection of formwork for shape, lines, location, and dimensions	Field inspection		Periodic	
<b>1705.4 Masonry Construction</b>				
<b>(A) Level A, B and C Quality Assurance:</b>				
1. Verify compliance with approved submittals	Field Inspection		Periodic	
<b>(B) Level B Quality Assurance:</b>				
1. Verification of f <sub>m</sub> and f <sub>AAC</sub> prior to construction	Testing by unit strength method or prism test method		Periodic	
<b>(C) Level C Quality Assurance:</b>				
1. Verification of f <sub>m</sub> and f <sub>AAC</sub> prior to construction and for every 5,000 SF during construction	Testing by unit strength method or prism test method		Periodic	
2. Verification of proportions of materials in premixed or preblended mortar, prestressing grout, and grout other than self-consolidating grout, as delivered to the project site	Field inspection		Continuous	
3. Verify placement of masonry units	Field Inspection		Periodic	
<b>(D) Levels B and C Quality Assurance:</b>				
1. Verification of Slump Flow and Visual Stability Index (VSI) of self-consolidating grout as delivered to the project	Field testing		Continuous	
2. Verify compliance with approved submittals	Field inspection		Periodic	
3. Verify proportions of site-mixed mortar, grout and prestressing grout for bonded tendons	Field Inspection		Periodic	
4. Verify grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages	Field Inspection		Periodic	
5. Verify construction of mortar joints	Field Inspection		Periodic	
6. Verify placement of reinforcement, connectors, and prestressing tendons and anchorages	Field Inspection		Level B - Periodic	
			Level C - Continuous	

## SCHEDULE OF SPECIAL INSPECTION SERVICES

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.		
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	AGENT*
7. Verify grout space prior to grouting	Field Inspection		Level B - Periodic	
			Level C - Continuous	
8. Verify placement of grout and prestressing grout for bonded tendons	Field Inspection		Continuous	
9. Verify size and location of structural masonry elements	Field Inspection		Periodic	
10. Verify type, size, and location of anchors, including details of anchorage of masonry to structural members, frames, or other construction.	Field inspection		Level B - Periodic	
			Level C - Continuous	
11. Verify welding of reinforcement (see 1705.2.2)	Field inspection		Continuous	
12. Verify preparation, construction, and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F)	Field inspection		Periodic	
13. Verify application and measurement of prestressing force	Field Inspection		Continuous	
14. Verify placement of AAC masonry units and construction of thin-bed mortar joints (first 5000 SF of AAC masonry)	Field inspection		Continuous	
15. Verify placement of AAC masonry units and construction of thin-bed mortar joints (after the first 5000 SF of AAC masonry)	Field inspection		Level B - Periodic	
			Level C - Continuous	
16. Verify properties of thin-bed mortar for AAC masonry (first 5000 SF of AAC masonry)	Field inspection		Continuous	
17. Verify properties of thin-bed mortar for AAC masonry (after the first 5000 SF of AAC masonry)	Field inspection		Level B - Periodic	
			Level C - Continuous	
18. Prepare grout and mortar specimens	Field testing		Level B - Periodic	
			Level C - Continuous	
19. Observe preparation of prisms	Field inspection		Level B - Periodic	
			Level C - Continuous	
<b>1705.5 Wood Construction</b>				
1. Inspection of the prefabrication process of wood structural elements and assemblies in accordance with Section 1704.2.5	In-plant review (3)		Periodic	
2. For high-load diaphragms, verify grade and thickness of structural panel sheathing agree with approved building plans	Field inspection		Periodic	

## SCHEDULE OF SPECIAL INSPECTION SERVICES

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.		
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	AGENT*
3. For high-load diaphragms, verify nominal size of framing members at adjoining panel edges, nail or staple diameter and length, number of fastener lines, and that spacing between fasteners in each line and at edge margins agree with approved building plans	Field inspection		Periodic	
4. Metal-plate-connected wood trusses spanning 60 feet or greater: verify temporary and permanent restraint/bracing are installed in accordance with the approved truss submittal package	Field inspection		Periodic	
<b>1705.6 Soils</b>				
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Field inspection		Periodic	
2. Verify excavations are extended to proper depth and have reached proper material.	Field inspection		Periodic	
3. Perform classification and testing of controlled fill materials.	Field inspection		Periodic	
4. Verify use of proper materials, densities, and lift thicknesses during placement and compaction of controlled fill	Field inspection		Continuous	
5. Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly	Field inspection		Periodic	
<b>1705.7 Driven Deep Foundations</b>				
1. Verify element materials, sizes and lengths comply with requirements	Field inspection		Continuous	
2. Determine capacities of test elements and conduct additional load tests, as required	Field inspection		Continuous	
3. Inspect driving operations and maintain complete and accurate records for each element	Field inspection		Continuous	
4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element	Field inspection		Continuous	
5. For steel elements, perform additional inspections per Section 1705.2	See Section 1705.2		See Section 1705.2	
6. For concrete elements and concrete-filled elements, perform additional inspections per Section 1705.3	See Section 1705.3		See Section 1705.3	
7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge	Field inspection		In accordance with construction documents	

## SCHEDULE OF SPECIAL INSPECTION SERVICES

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.	
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT	
		Y/N	EXTENT
			AGENT*
8. Perform additional inspections and tests in accordance with the construction documents	Field Inspection and testing		In accordance with construction documents
<b>1705.8 Cast-in-Place Deep Foundations</b>			
1. Observe drilling operations and maintain complete and accurate records for each element	Field inspection		Continuous
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes	Field inspection		Continuous
3. For concrete elements, perform additional inspections in accordance with Section 1705.3	See Section 1705.3		See Section 1705.3
4. Perform additional special inspections and tests in accordance with the construction documents	Field Inspection and testing		In accordance with construction documents
<b>1705.9 Helical Pile Foundations</b>			
1. Verify installation equipment, pile dimensions, tip elevations, final depth, final installation torque and other data as required.	Field inspection		Continuous
2. Perform additional inspections and tests in accordance with the construction documents	Field Inspection and testing		In accordance with construction documents
<b>1705.12.1 Structural Wood Special Inspections For Wind Resistance</b>			
1. Inspection of field gluing operations of elements of the main windforce-resisting system	Field inspection		Continuous
2. Inspection of nailing, bolting, anchoring and other fastening of components within the main windforce-resisting system	Shop (3) and field inspection		Periodic
<b>1705.12.2 Cold-formed Steel Special Inspections For Wind Resistance</b>			
1. Inspection during welding operations of elements of the main windforce-resisting system	Shop (3) and field inspection		Periodic

## SCHEDULE OF SPECIAL INSPECTION SERVICES

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.		
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	AGENT*
2. Inspections for screw attachment, bolting, anchoring and other fastening of components within the main windforce-resisting system	Shop (3) and field inspection		Periodic	
<b>1705.12.3 Wind-resisting Components</b>				
1. Roof cladding	Shop (3) and field inspection		Periodic	
2. Wall cladding	Shop (3) and field inspection		Periodic	
<b>1705.13.1 Structural Steel Special Inspections for Seismic Resistance</b>				
Inspection of structural steel in accordance with AISC 341	Shop (3) and field inspection		In accordance with AISC 341	
<b>1705.13.2 Structural Wood Special Inspections for Seismic Resistance</b>				
1. Inspection of field gluing operations of elements of the seismic-force resisting system	Field inspection		Continuous	
2. Inspection of nailing, bolting, anchoring and other fastening of components within the seismic-force-resisting system	Shop (3) and field inspection		Periodic	
<b>1705.13.3 Cold-formed Steel Light-Frame Construction Special Inspections for Seismic Resistance</b>				
1. Inspection during welding operations of elements of the seismic-force-resisting system	Shop (3) and field inspection		Periodic	
2. Inspections for screw attachment, bolting, anchoring and other fastening of components within the seismic-force-resisting system	Shop (3) and field inspection		Periodic	
<b>1705.13.4 Designated Seismic Systems Verification</b>				
Inspect and verify that the component label, anchorage or mounting conforms to the certificate of compliance in accordance with Section 1705.12.3	Field inspection		Periodic	
<b>1705.13.5 Architectural Components Special Inspections for Seismic Resistance</b>				
1. Inspection during the erection and fastening of exterior cladding and interior and exterior veneer	Field inspection		Periodic	



## SCHEDULE OF SPECIAL INSPECTION SERVICES

Per Chapter 17 of the 20124 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.		
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	AGENT*
2. Inspection during the erection and fastening of interior and exterior nonbearing walls	Field inspection		Periodic	
3. Inspection during anchorage of access floors	Field inspection		Periodic	
<b>1705.13.6 Plumbing, Mechanical and Electrical Components Special Inspections for Seismic Resistance</b>				
1. Inspection during the anchorage of electrical equipment for emergency or standby power systems. (SDC C,D,E,F)	Field inspection		Periodic	
2. Inspection during the anchorage of other electrical equipment. (SDC E,F)	Field inspection		Periodic	
3. Inspection during installation and anchorage of piping systems designed to carry hazardous materials, and their associated mechanical units (SDC C,D,E,F)	Field inspection		Periodic	
4. Inspection during the installation and anchorage of HVAC ductwork that will contain hazardous materials. (SDC C,D,E,F)	Field inspection		Periodic	
5. Inspection during the installation and anchorage of vibration isolation systems. (SDC C,D,E,F)	Field inspection		Periodic	
6. Inspection during the installation and anchorage of HVAC ductwork and piping systems where sprinkler systems are installed (SDC C,D,E,F)				
<b>1705.13.7 Storage Racks Special Inspections for Seismic Resistance (SDC D,E,F)</b>				
Inspection during the anchorage of storage racks 8 feet or greater in height	Field inspection		Periodic	
<b>1705.13.8 Seismic Isolation Systems (SDC B,C,D,E,F)</b>				
Inspection during the fabrication and installation of isolator units and energy dissipation devices used as part of the seismic isolation system	Shop and field inspection		Periodic	
<b>1705.13.9 Cold-formed Steel Special Bolted Moment Frames for Seismic Resistance</b>				
1. Inspection of cold-formed steel special bolted moment frames in the seismic force-resisting systems of structures assigned to Seismic Design Category D, E or F.	Field inspection		Periodic	

## SCHEDULE OF SPECIAL INSPECTION SERVICES

Per Chapter 17 of the 20124 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.	APPLICABLE TO THIS PROJECT	
MATERIAL / ACTIVITY	SERVICE	Y/N	EXTENT	AGENT*
<b>1705.14.1 Structural Steel Testing and Qualification for Seismic Resistance</b>				
Test in accordance with the quality assurance requirements of AISC 341	Shop (3) and field testing		Per AISC 341	
<b>1705.14.2 Seismic Certification of Nonstructural Components</b>				
Review certificate of compliance for designated seismic system components.	Certificate of compliance review		Each submittal	
<b>1705.14.3 Designated Seismic Systems</b>				
Review certificate of compliance for designated seismic system components.	Certificate of compliance review		Each submittal	
<b>1705.14.4 Seismic Isolation Systems</b>				
Test seismic isolation system in accordance with ASCE 7 Section 17.8	Prototype testing		Per ASCE 7	
<b>1705.15 Sprayed Fire-resistant Materials</b>				
1. Verify surface condition preparation of structural members	Field inspection		Periodic	These 5 Items will all be Y for yes when we have Sprayed Fireproofing on the project.
2. Verify substrate temperatures and ventilation of area before and after application.	Field inspection		Periodic	Remove these notes when completing this form.
3. Verify average thickness of sprayed fire-resistant materials applied to structural members	Field inspection		Periodic	
4. Verify density of the sprayed fire-resistant material complies with approved fire-resistant design	Field inspection and testing		Periodic Per IBC Section 1705.14.5	
5. Verify the cohesive/adhesive bond strength of the cured sprayed fire-resistant material	Field inspection and testing		Periodic Per IBC Section 1705.14.6	
<b>1705.16 Mastic and Intumescent Fire-Resistant Coatings</b>				
Inspect mastic and intumescent fire-resistant coatings applied to structural elements and decks	Field inspection		Periodic	This Items will all be Y for yes when we have Intumescent Fireproofing on the project.
<b>1705.17 Exterior Insulation and Finish Systems (EIFS)</b>				
1. Verify materials, details and installations are per the approved construction documents	Field inspection		Periodic	We only specify <b>drainable</b> EIFS with a WR barrier. These systems do not require a special inspection.
2. Inspection of water-resistive barrier over sheathing substrate	Field inspection		Periodic	So, even if you have EIFS, you can mark these two boxes N for no. Remove these notes when completing this form.

**SCHEDULE OF SPECIAL INSPECTION SERVICES**

Per Chapter 17 of the 2024 Ohio Building Code the following items require Special Inspections. **Special Inspectors must be employed by the Owner or registered design professional in responsible charge acting as the Owner's agent.**

PROJECT ADDRESS		PERMIT NO.		
MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT		
		Y/N	EXTENT	AGENT*
<b>1705.18 Fire-Resistant Penetrations and Joints</b>				
1. Inspect penetration firestop systems	Field Inspection		Per ASTM E2174	SI's are required for building in Risk Category III and IV (OBC Table 1604.5) and in High Rise Buildings.
2. Inspect fire-resistant joint systems	Field Inspection		Per ASTM E2174	That includes all Group I-2 occupancies and Group E with over 250 occupant load. Remove these notes when completing this form.
<b>1705.19 Smoke Control Systems</b>				
1. Leakage testing and recording of device locations prior to concealment	Field testing		Periodic	This Item is for Stair and Elevator shaft pressurization and smoke exhaust and for smoke evacuation at large spaces and atriums.
2. Prior to occupancy and after sufficient completion, pressure difference testing, flow measurements, and detection and control verification	Field testing		Periodic	These are systems that are not typically used. Don't confuse this item with having typical smoke detection and duct detectors on your project. Remove these notes when completing this form.
-Special inspection reports are to be kept on the job for Building Inspector Verification.				
-All discrepancies must be brought to the immediate attention of the Contractor for correction. If not corrected discrepancies must be brought to the <u>immediate attention of the building official, and design professional in responsible charge before completion of that stage of work.</u>				
-A final special inspection report, from the Special Inspector(s), documenting the required special inspections were performed, correction of discrepancies, and compliance with construction documents shall be submitted before a Certificate of Occupancy is issued.				
<b>* INSPECTION AGENT'S FIRM</b>		<b>ADDRESS</b>		
1.				
2.				
3.				

SECTION 014100

STATEMENT OF SPECIAL INSPECTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements required for compliance with the Ohio Building Code (OBC), Chapter 17, Special Inspections and Tests.
  - 1. Specified tests, inspections, and related actions of this section do not limit Contractor's other quality-assurance and –control procedures that facilitate compliance with the contract documents.
  - 2. Requirements for Contractor to provide quality-assurance and –control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this section.
- B. The Owner or the Owners representative will engage one or more qualified special inspectors and/or testing agencies to conduct the structural tests and special inspections specified in this section.
  - 1. These special inspections and tests are in addition to the inspections by the building officials, of the authority having jurisdiction, per OBC Section 108.
- C. Related Sections include the following:
  - 1. Division 02 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. The following definitions are from the OBC Chapter 2.
- B. Approved Agency: An established and accredited testing laboratory, listing agency, inspection body, or field evaluation body recognized by the board of building standards providing services consistent with their accreditation and the code section requiring the approved agency service. The registered design professional in responsible charge and engineers of record involved in the design of the project are permitted to act as the approved agency and their personnel are permitted to act as the special inspector for the work designed by them, provided those personnel meet the qualification requirements of Section 1704.
- C. Approved Fabricator: An established and qualified person, firm or corporation approved in accordance with the rule of the board of building standards.
- D. Certificate of Compliance: A certificate stating that materials and products meet specified standards or that work was done in compliance with approved construction documents.

- E. Designated Seismic System: Those nonstructural components that require design in accordance with Chapter 13 of ASCE 7 and for which the component important factor,  $I_p$ , is greater than 1 in accordance with Section 13.1.3 of ASCE 7.
  - F. Fabricated Item: Structural, load-bearing or lateral load-resisting members of assemblies consisting of materials assembled prior to installation in a building or structure, or subjected to operations such as heat treatment, thermal cutting, cold working or reforming after manufacture and prior to installation in a building or structure. Materials produced in accordance with standards referenced by this code, such as rolled structural steel shapes, steel reinforcing bars, masonry units and wood structural panels, or in accordance with a referenced standard that provides requirements for quality control done under the supervision of *an approved agency*, are not “fabricated items”.
  - G. Intumescent Fire Resistive Coatings: Thin film liquid mixture applied to substrates by brush, roller, spray or trowel which expands into a protective foamed layer to provide fire-resistant protection of the substrates when exposed to flame or intense heat.
  - H. Main Windforce Resisting System: An assemblage of structural elements assigned to provide support and stability for the overall structure. The system generally receives wind loading from more than one surface.
  - I. Mastic Fire Resistant Coatings: Liquid mixture applied to a substrate by brush, roller, spray or trowel that provides fire-resistant protection of a substrate when exposed to flame or intense heat.
  - J. Special Inspection: Inspection of construction requiring the expertise of an approved special inspector in order to ensure compliance with his code and the approved construction documents.
    - 1. Continuous special inspection: Special inspection by the special inspector who is present continuously when and where the work to be inspected is being performed.
    - 2. Periodic special inspection: Special inspection by the special inspector who is intermittently present where the work to be inspected has been or is being performed.
  - K. Special Inspection Agency: An established, independent, nationally recognized and accredited, third-party conformity assessment body regularly engaged in performing special inspections as required by Chapter 17.
  - L. Special Inspector: A qualified person who shall demonstrate competence for the inspection of the particular type of construction or operation requiring special inspection. A special inspector shall be an employee of an accredited special inspection agency recognized by the board in accordance with (OBC) Section 114 and rule 4101:7-6-01 of the (Ohio) Administrative Code, the registered design professional of record involved in the design of the project, or an agent contracted by the owner or registered design professional to perform special inspections whose qualifications comply with Section 1704.1.
  - M. Sprayed Fire-Resistant Materials: Cementitious or fibrous materials that are sprayed to provide fire-resistant protection of the substrates.
  - N. Structural Observation: The visual observation of the structural system by a registered design professional for general conformance to the approved construction documents.
- 1.4 QUALITY ASSURANCE
- A. Approved Special Inspectors and Agency Qualifications:

1. A Special Inspector shall meet the requirements set forth in the OBC definition of the Special Inspector and the following:
  - a. Minimum qualifications of inspection and testing agencies and their personnel shall comply with ASTM E329-03 standard Specification for Agencies in the Testing and / or inspection of Materials Used in Construction.
    - 1) Inspectors and individuals performing tests shall be certified for the work being performed as outlined in the appendix of the ASTM E329. Certification by organizations other than those listed must be submitted to the building official for consideration before proceeding with work.
2. In addition to these requirements, local jurisdiction may have additional requirements. It is the responsibility of the testing and inspection agencies to meet local requirements and comply with local procedures.

PART 2 - PRODUCTS (not used)

PART 3 - EXECUTION

3.1 CONTRACTOR'S RESPONSIBILITY

- A. The Contactor shall coordinate the inspection and testing services with the progress of the work. The Contractor shall provide sufficient notice to allow proper scheduling of all personnel. The Contractor shall provide safe access for performing inspection and on-site testing.
  1. The construction or work shall remain accessible and exposed for special inspection or testing purposes until completion of the required special inspection or tests.
- B. The Contractor shall submit schedules to the Owner, registered design professionals and testing and inspecting agencies. Schedules will note milestones and durations of time for materials requiring structural tests and special inspections.
- C. Each Contractor responsible for the construction of a main wind or seismic-force-resisting system, designated seismic system or a wind or seismic resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the building official and to the Owner prior to the commencement of work on the system or component. The Contractor's statement of responsibility shall contain the following:
  1. Acknowledgment of awareness of the special requirements contained in the statement of special inspections.
  2. Acknowledgment that control will be exercised to obtain conformance with the construction documents approved by the building official.
  3. Procedures for exercising control within the Contractor's organization, the method and frequency of reporting and the distribution of the reports.
  4. Identification and qualifications of the person(s) exercising such control and their position(s) in the organization.

3.2 SPECIAL INSPECTOR RESPONSIBILITY

- A. Report Requirements - Special inspectors shall keep records of special inspections and tests.

1. The special inspectors shall submit reports of special inspections and tests to the building official and to the registered design professional in responsible charge per the OBC, as well as the Contractor, Architect (if Architect is not the registered design professional) and Owner. Reports shall indicate that work inspected or tested was or was not completed in conformance to approved construction documents.
    - a. Discrepancies shall be brought to the immediate attention of the Contractor for correction.
      - 1) The registered design professional, Architect and Owner shall be simultaneously notified of the discrepancies also.
    - b. Reports shall be submitted within one week of the inspection or test.
      - 1) Non-Compliant Work: If they are not corrected, the discrepancies shall be brought to the attention of the building official, registered design professional in responsible charge, Architect and Owner prior to the completion of that phase of the work.
  2. Special inspection reports and test results shall include, but not be limited to, the following:
    - a. Date of inspection.
    - b. Description of inspections or tests performed including location (reference grid lines, floor level, elevations, etc.).
    - c. Statement noting that the work, material, and/or product conforms or does not conform to the construction document requirements.
      - 1) Name and signature of Contractor's representative who was notified of work, material, and/or products that do not meet the construction document requirements.
    - d. Name and signature of special inspector and/or testing agency representative performing the work.
  3. Schedule of Non-Compliant Work: Each special inspector and/or testing agency representative shall maintain a log of work that does not meet the requirements of the construction documents. Include reference to original inspection/test report and subsequent dates of re-inspection/retesting.
  4. A final report documenting all of the projects required special inspections and tests, and correction of any discrepancies noted in the inspections and tests, shall be submitted:
    - a. At a point in time agreed upon prior to the start of work by the owner or the owner's representative.
    - b. To the building official prior to the application for a certificate of occupancy.
- B. Conflicts with the Contract Documents shall be brought to the attention of the Architect and the registered design professional in responsible charge (if not the Architect).

### 3.3 TESTING AND INSPECTION

- A. Testing and inspection shall be in accordance with the OBC Chapter 17 and attached Schedule of Special Inspections.

PART 4 - SCHEDULES AND FORMS

4.1 FABRICATOR'S CERTIFICATE OF COMPLIANCE

- A. Per the OBC, fabricators that have been registered and approved to perform work without special inspections shall submit certificates of compliance at the completion of fabrication.
  - 1. Certificates of Compliance are to be submitted to the Owner or the Owners representative for submittal to the building official.
  - 2. Certificates of Compliance are to state that the work was performed in accordance with the approved construction documents.

4.2 SCHEDULE OF SPECIAL INSPECTIONS

- A. See attachment.

END OF SECTION



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": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 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.
- 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 indicated in Thorson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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. Division 01 Section "Work Restrictions" for work restrictions and limitations on utility interruptions when included in project manual.

1.3 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.
- C. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1 when work affects egress from occupied portions of existing facilities.

1.4 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

1.5 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.
- 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.

1.6 MATERIALS

- A. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil minimum thickness, with flame-spread rating of 15 or less per ASTM E 84 and passing NFPA 701 Test Method 2.
- B. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches.
- C. Floor Surface Protection Material: Provide Barriclad 2.2 material or an alternative product approved by Architect. Manufacturer: Barriclad Technologies, Inc.; Phone: 1-888-478-0304; [www.barriclad.com](http://www.barriclad.com).
- D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

1.7 SITE ENCLOSURE FENCE

- A. Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
  - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations or if included as indicated on Drawings.
  - 2. Maintain fence in a neat and orderly condition for the duration of the project. Contract or expand fence limits as required to enclose the area of site work or as requested by the Owner or Architect.
  - 3. When adjacent to or part of an existing facility, maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- B. Chain Link Fence Panels – Free Standing: Provide minimum 6 feet high by 12 feet long galvanized chain-link fence panels with horizontal and vertical reinforced frames. Provide panel stands and adequate ballast to assist against toppling in high winds.

1.8 CONSTRUCTION PERSONNEL PARKING AREAS

- A. Provide temporary parking area for use by construction personnel as indicated on Drawings or if not indicated, sized to accommodate project requirements.

1.9 WASTE DISPOSAL FACILITIES (DUMPSTERS)

- A. 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 Division 01 Section "Execution."
  - 1. When included, comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."
  - 2. Waste Disposal Facilities shall be provided for the Work of all Contracts.

1.10 COMMON-USE FIELD OFFICE

- A. Provide temporary common-use field office of sufficient size to accommodate the needs of Owner, Architect, and Project Coordinator's office activities and to host Project meetings specified in other Division 01 Sections. Office shall be kept clean and orderly.

1. All fees, permits, rental charges, utility company equipment and connection charges, usage charges, etc. are to be paid by the Contract responsible for providing the common-use field office.
2. Provide electrical service connection to common-use field office. Include all required transformers and panels as required.
3. Provide temporary telephone/facsimile services and equipment in common-use field office for use by the Owner, Architect and Project Coordinator.
4. Provide Cable or DSL internet service and routing equipment (provide a minimum of three wired access points) in common-use field office for use by the Owner, Architect and Project Coordinator.
5. Provide a private office within common-use field office for use by the Owner and Architect.
6. Other Contracts requiring the use of a field office shall provide this office at their own expense.

#### 1.11 STORAGE AND FABRICATION FACILITIES

- A. Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
  1. Store combustible materials apart from building.

#### 1.12 FIRE EXTINGUISHERS

- A. Provide portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

#### 1.13 PROJECT SIGNS

- A. Identification Signs: Provide Project identification signs when indicated on Drawings.
- B. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
  1. Provide temporary, directional signs for construction personnel and visitors.
- C. Maintain and touchup signs so they are legible at all times.
- D. Unauthorized signs are not permitted.

#### 1.14 TEMPORARY EGRESS

- A. Maintain temporary egress from existing occupied facilities as indicated and as required by Authorities Having Jurisdiction (AHJ) and the Owner.

#### 1.15 ELECTRIC POWER - USE OF EXISTING FACILITY POWER

- A. Use of Owner's existing electric power service will be permitted. Provide connections and extensions of services as required for construction operations. Clean and maintain electric power service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

1. Usage Charges to be paid by the Owner.
2. Provide temporary power stands or pedestals for use by all Contracts. Stands shall have multiple 110v-120v outlets and circuits. Each Contract requiring power greater than 110v-120v power shall provide this at their own expense.
3. Coordinate with the Owner prior to the commencement of work, regarding which existing panels and circuits are to be used for temporary power and lighting.

#### 1.16 TEMPORARY LIGHTING

- A. 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.
  2. In existing facilities where the construction activities may occur over a series of phases, temporarily relocate directional egress signage and lighting to direct building occupants and construction personnel away from hazards or dead-end pathways created by the construction activities. Coordinate the temporary relocation of egress signage with the authority having jurisdiction.
  3. Install lighting for Project identification sign, if applicable.

#### 1.17 WATER SERVICE – USE OF EXISTING FACILITY WATER SERVICE

- A. Use of the Owner's existing domestic water service will be permitted. Provide connections and extensions of services as required for construction operations. Clean and maintain water service in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
1. Usage Charges to be paid by the Owner.
  2. Each contract is responsible for its own hoses, nozzles, etc.

#### 1.18 SANITARY FACILITIES – USE OF EXISTING FACILITY RESTROOMS

- A. Use of the Owner's existing toilet facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
1. Coordinate with Owner regarding specific restrooms available for use.

#### 1.19 NATURAL GAS SERVICE - USE OF EXISTING GAS SERVICE

- A. Use of Owner's existing natural gas service will be permitted. Provide connections and extensions of services as required for construction operations. Clean and maintain natural gas service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
1. Usage Charges to be paid by the Owner.

1.20 EXISTING BUILDING ENCLOSURES

- A. Maintain enclosure of the existing building envelope for the duration of construction. Where temporary openings are required in the existing building envelope, provide temporary enclosures to protect in progress and completed construction from exposure, foul weather, other construction operations and similar activities. Existing building envelope shall remain weathertight for the duration of the work.
  - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

1.21 TEMPORARY PARTITIONS

- A. Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner and tenants from fumes and noise.
  - 1. Construct dustproof partitions as indicated on the drawings.
  - 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. Maintain the integrity of the dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
  - 6. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
  - 7. Provide walk-off mats at each entrance through temporary partitions.

1.22 PROTECTION OF FINISHES

- A. Provide surface protection material to protect existing and new flooring, walls, ceiling, etc. surfaces.
  - 1. The Project Coordinator shall be responsible for the protection of all floor finishes installed as new construction, as it pertains to this project.
  - 2. Each Contract shall be responsible for the protection of all finishes, unless noted otherwise. Finishes may include but not be limited to: existing flooring and new/existing (walls, ceilings, countertops, furniture, equipment, etc.).

1.23 HEATING, COOLING AND VENTILATION AFTER BUILDING ENCLOSURE

- A. Heating
  - 1. Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
  - 2. HVAC Equipment: Provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
    - a. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.





1.28 TEMPORARY USE OF PERMANENT STAIRS

- A. 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.
  - 1. Project Coordinator shall clean and maintain stairs during construction.

1.29 TEMPORARY ROADS AND PAVED AREAS

- A. Construct and maintain temporary roads and paved areas adequate for construction operations.
  - 1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
  - 2. Provide road and paved area street sweeping.

1.30 TRAFFIC CONTROLS

- A. 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.

1.31 DEWATERING FACILITIES AND DRAINS

- A. 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.
  - 2. Remove snow and ice as required to minimize accumulations.

1.32 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. 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.

1.33 STORMWATER CONTROL

- A. 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.

1.34 TREE AND PLANT PROTECTION

- A. 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. When included, comply with requirements specified in Division 01 Section "Temporary Tree and Plant Protection."

1.35 PEST CONTROL

- A. Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

1.36 OPERATION, TERMINATION, AND REMOVAL OF TEMPORARY FACILITIES

- 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 Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 015329

INTERIM LIFE SAFETY

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. This Section includes interim life safety measures during construction.
- B. Related Section include the following:
  - 1. Division 01 Section "Temporary Facilities and Controls".

1.3 GENERAL

- A. If ongoing construction obstructs designated egress corridors, provide and document alternative exits that conform to requirements established by Authority having jurisdiction.
- B. Buildings and areas under construction must maintain escape facilities for construction workers and Owner personnel. Provide Owner, staff and construction workers with training when alternate exits are designated.
- C. Means of egress in construction areas shall be inspected daily. Ensure free and unobstructed access to exits for occupants and for emergency forces.
- D. Ensure that fire alarm, detection and suppression systems are not impaired or disabled.
  - 1. Provide a Fire Watch and notify the Local Fire Department when any of the above-mentioned systems are out of service for more than four hours in a 24 hour period. Coordinate activities with the Owner and Local Fire Department, and Authorities Having Jurisdiction. Contractor responsible for the specific system shall be responsible for providing fire watch.
  - 2. The Contractor shall undertake all necessary measures, such as protecting smoke detectors to prevent activation of the fire alarm. The Contractor shall pay all fines and costs levied by the local authorities for response to a false alarm caused by the Contractor.
- E. Ensure temporary construction partitions are smoke tight and built of noncombustible materials that will not contribute to the development of spread of fire.
- F. Provide additional fire-fighting equipment and use training for personnel in areas adjacent to construction area.
  - 1. Provide portable fire extinguishers throughout the work area.

- G. Notify and coordinate all work that involves welding, cutting or open flames with the Owner. Obtain applicable Owner permits.
- H. Smoking is prohibited in all construction areas and all areas of the building.
- I. Develop and enforce storage, housekeeping, and debris-removal that reduce the flammable and combustible fire load of the building to the lower level necessary for daily operations.
- J. Increase hazard surveillance of buildings, grounds and equipment with special attention to excavations, construction areas, construction storage and field offices.
- K. Notify Owner and provide input to permit Owner to train personnel when structural or compartmentation features of fire safety area compromised.
- L. Buildings and areas under construction shall at all times maintain safe escape routes for construction and Owner personnel and patients. Contractors are to ensure that free and unobstructed access is maintained for emergency egress and access to areas by emergency forces.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

END OF SECTION

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.

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. Products salvaged or recycled from other projects are not considered new products.
- B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.

1.4 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.
  - 1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
  - 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.5 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 to determine that products are undamaged and properly protected.
- C. Storage:
  - 1. Store products to allow for inspection and measurement of quantity or counting of units.
  - 2. Store materials in a manner that will not endanger Project structure.
  - 3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
  - 4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
  - 5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
  - 6. Protect stored products from damage and liquids from freezing.
  - 7. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
  - 2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
  - 3. See Divisions 02 through 33 Sections for specific content requirements and particular requirements for submitting special warranties.

- C. Submittal Time: Comply with requirements in Division 01 Section "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.
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 not in conflict with 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.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
  3. Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements.
  4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
  5. 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 indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Provide custom color or finish if required.
- C. Visual Matching Specification: Where Specifications require "match Architect's sample", provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches. Provide custom color or finish if required.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Division 01 Section "Substitution Procedures" for proposal of product.
  2. No additional compensation will be owed to the Contractor for matching Architect's sample.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.



PART 3 - EXECUTION (Not Used)

END OF SECTION

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. This Section includes general 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. Coordination of Owner-installed products.
  - 5. Progress cleaning.
  - 6. Starting and adjusting.
  - 7. Protection of installed construction.
  - 8. Correction of the Work.

1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

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 work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
  - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, 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, and water-service piping; and underground electrical services.
  2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. 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. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
    - a. Description of the Work.
    - b. List of detrimental conditions, including substrates.
    - c. List of unacceptable installation tolerances.
    - d. Recommended corrections.
  2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  4. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
- 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. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

### 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. If discrepancies are discovered, notify Architect promptly.

- B. General: Engage a land surveyor or professional engineer to lay out the Work using accepted surveying practices.
  - 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
  - 2. Do not scale Drawings to obtain required dimensions.
  - 3. Inform installers of lines and levels to which they must comply.
  - 4. Check the location, level and plumb, of every major element as the Work progresses.
  - 5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
  - 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. 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.
- E. 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. Identification: Identify existing benchmarks, control points, and property corners.
- B. 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.
- C. Benchmarks: Establish and maintain a minimum of three 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. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
  - 4. Maintain minimum headroom clearance of 8 feet in spaces without a suspended ceiling.
- 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 the best possible results. 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.
- 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: Do not use tools or equipment that produce harmful noise levels.
- G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- H. Anchors and Fasteners: Provide blocking and attachment plates and anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### 3.6 OWNER-INSTALLED PRODUCTS

- A. Site Access: Provide access to Project site for Owner's construction personnel.
- 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.

### 3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. 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 materials more than 7 days during normal weather or 3 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.
- 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.
- D. Daily cleaning, including broom cleaning and mopping, of the overall Project Area (including construction egress pathways, stairwells, site staging areas, dumpster staging areas, etc.) is the responsibility of the Project Coordinator. Cleaning required in a specific area of the Project resulting from concentrated effort by a particular trade is the responsibility of that trade.
- E. 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.
- F. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- G. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- I. 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.

- J. 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.
- K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

### 3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."
- E. Refer to Mechanical, Electrical and Plumbing specification sections for additional requirements.

### 3.9 PROTECTION 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. Comply with manufacturer's written instructions for temperature and relative humidity.

### 3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
  - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 017329

CUTTING AND PATCHING

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. Cutting and patching.
- B. Related Sections:
  - 1. Division 02 Section "Selective Structure Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.
- C. Selective Demolition is recognized as a related but separate category of Work, which may or may not require cutting and patching as defined in this Section.

1.4 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: Shore, brace, and support structural element during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection. Engage a Structural Engineer registered in jurisdiction of the Work to verify activities and procedures.
  - 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 but are not limited to the following:
    - a. Primary operational systems and equipment.
    - b. Fire separation assemblies.



- c. Air or smoke barriers.
  - d. Fire-suppression systems.
  - e. Mechanical systems piping and ducts.
  - f. Control systems.
  - g. Communication systems.
  - h. Electrical wiring systems.
  - i. 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 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. Equipment supports.
  - e. Piping, ductwork, vessels, and equipment.
  - f. 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. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of products and equipment.

## 1.5 WARRANTY

- A. 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.

## 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 the Architect for the visual and functional performance of in-place materials.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

#### 3.2 PREPARATION

- A. 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.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

#### 3.3 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 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. Temporary Support: Provide temporary support of work to be cut.
- C. 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.
- D. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

- E. Existing Utility Services and Mechanical, Plumbing, and Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize, or where feasible in Architects opinion, prevent interruption to occupied areas.
- F. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
  - 5. Mechanical, Plumbing 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.
- G. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
  - 1. 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 minimize 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. For an assembly, refinish the entire unit. Provide additional coats until patch blends with adjacent surfaces. Except where indicated otherwise, finish sheen and color to match existing.
  - 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.
  - 6. Floor and Wall Penetrations: Where pipes, conduits, ducts and other items are removed from floors and walls resulting in openings, Contractor responsible for the items removal shall

- patch the resulting opening with materials matching the existing adjacent construction and as required to maintain fire ratings.
7. Demolished Walls: Where walls are removed and recesses in the floor substrate result, the Contractor responsible for removal of the wall shall patch the floor level with the adjacent substrate for subsequent finish floor installation.
- H. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
1. 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.

END OF SECTION

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.
5. Extra materials schedule.

- B. Related Requirements:

1. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
2. Division 01 Section "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
3. Division 01 Section "Demonstration and Training" for requirements for instructing Owner's personnel.
4. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBMITTALS

- A. Refer to body of section for required submittals.

1.4 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.

- B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

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, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect. Label with manufacturer's name and model number where applicable.
    - a. Refer to extra materials list at end of Section. Submit copy of extra materials schedule endorsed and dated by the Owner.
  5. Submit test/adjust/balance records.
  6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
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. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."
  6. Advise Owner of changeover in heat and other utilities.
  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, including touchup painting.
  10. Touch up 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 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. Reinspection: 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.

## 1.5 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 according to Division 01 Section "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). 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 if applicable.
- 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 or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

## 1.6 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Prior to request for substantial completion inspection.
1. Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 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.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
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.
  4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

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.
  - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

2.2 EXTRA MATERIALS

- A. Furnish extra materials, tools, spare parts and similar items identified in Divisions 02 through 49 Sections and/or Extra Materials Schedule located in Part 3 of this Section.
- B. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
- C. Extra materials shall be from the same production run and/or batch mix as installed items.

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, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Remove snow and ice to provide safe access to building.
    - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - h. Sweep concrete floors broom clean in unoccupied spaces.



- i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
  - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - k. Remove labels that are not permanent.
  - l. Wipe surfaces of mechanical and electrical equipment, elevator equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
  - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - q. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Division 01 Section "Temporary Facilities and Controls." Prepare written report.

### 3.2 ATTACHMENTS

- A. Extra Material Schedule: Complete and submit attached extra material schedule.
- B. Contractor Substantial Completion Checklist: Complete and submit attached Contractor Substantial Completion Checklist form with request for substantial completion inspection.

**CONTRACTOR SUBSTANTIAL COMPLETION CHECKLIST**

Project No. \_\_\_\_\_ Project Name \_\_\_\_\_

Contract Type \_\_\_\_\_ Contractor \_\_\_\_\_

**Items listed must be complete prior to request for substantial completion inspection**

Description	Date Completed or Transmitted to Owner / Architect if Applicable	Owner Acknowledgement
<b>Certificates of Release</b>		
Life Safety Inspection/Occupancy Certificate		
Certificate of Pressure Piping		
Certificate of Piping Purification		
Certificate of Underground Water Main Flush		
Certificate of Boiler Inspection		
Certificate of Plumbing Inspection		
<b>As Built Documents</b>		
<b>Operating / Maintenance Manuals</b>		
<b>Warranties</b>		
<b>Maintenance Bonds</b>		
<b>Maintenance Service Agreements</b>		
<b>Extra Materials, Tools, Spare Parts</b>		
<b>Balance Reports</b>		
<b>Preventative Maintenance on Equipment Used Prior to Substantial Completion</b>		
<b>Instructed Owner's Personnel in Operation of Equipment</b>		
<b>Submitted Demonstration and Training Video</b>		
<b>Returned Owner's Keys</b>		
<b>Contractor's Punch List</b>		

END OF SECTION

Section #	Section Title	Extra Material Requirement	√	Amount Provided by Contractor

**General Notes:**

1. Contractor shall "check" the applicable Extra Material Requirement boxes specific to their contract/trade and provide a quantity description of material under the "Amount Provided by Contractor" column.
2. All extra material shall be packaged with protective covering for storage.
3. All extra material shall be identified with labels indicating the following: Contents, Architect's designation (i.e., P-1 for Paint Type-1), Project Name, Project Number, date and Project location within facility, if applicable (i.e. 3rd Floor, west wing).
4. All extra material shall be from the same production run and/or batch mix as installed units.

The below signature acknowledges that the Contractor has delivered and reviewed all of the Extra Materials indicated in the schedule above with the Owner.

The below signature acknowledges that the Owner has received, approved and taken possession of the Extra Materials indicated in the schedule above from the Contractor.

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Owner Name

\_\_\_\_\_  
Contractor Representative (Print)

\_\_\_\_\_  
Owner Representative (Print)

\_\_\_\_\_  
Contractor Representative Signature                      Date

\_\_\_\_\_  
Owner Representative Signature                      Date

EXTRA MATERIAL REQUIREMENT

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.
  - 2. Emergency manuals.
  - 3. Operation manuals for systems, subsystems, and equipment.
  - 4. Product maintenance manuals.
  - 5. Systems and equipment maintenance manuals.
- B. Related Requirements:
  - 1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
  - 2. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

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. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
  - 1. Architect and when applicable, the Commissioning Authority will comment on whether content of operations and maintenance submittals are acceptable.
  - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operations and maintenance manuals in the following format:
  - 1. PDF electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Architect.

- a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
  - b. Enable inserted reviewer comments on draft submittals.
- C. Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 30 days before commencing demonstration and training. Architect and when applicable Commissioning Authority will return copy with comments, if required.
1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 10 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.
- D. Submittal Procedures: Submit Operation and Maintenance Data related to mechanical, plumbing and electrical systems directly to applicable consulting engineer with transmittal to Architect.

## PART 2 - PRODUCTS

### 2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Directory: Prepare a single, comprehensive directory of emergency, operation, and maintenance data and materials, listing items and their location to facilitate ready access to desired information. Include a section in the directory for each of the following:
1. List of documents.
  2. List of systems.
  3. List of equipment.
  4. Table of contents.
- B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
- C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
- D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- 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."

### 2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization: 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 Construction Manager.
  7. Name and contact information for Architect.
  8. Name and contact information for Commissioning Authority.
  9. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
  10. 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.
- D. 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: Enable bookmarking of 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.

## 2.3 EMERGENCY MANUALS

- A. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
  2. Emergency instructions.
  3. Emergency procedures.
- B. 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.
  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.
- C. 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.

- D. 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.

## 2.4 OPERATION MANUALS

- A. 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.
- B. 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.
- C. 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.
- D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.



- E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

## 2.5 PRODUCT MAINTENANCE MANUALS

- A. 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.
- B. 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.
- C. 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.
- D. 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.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. 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.

## 2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. 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 warranty and bond information, as described below.
- B. 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.

- C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
  - 1. Standard maintenance instructions and bulletins.
  - 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.
  
- D. 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.
  
- E. 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.
  
- F. 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.
  
- G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
  
- H. 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 3 - EXECUTION

#### 3.1 MANUAL PREPARATION

- 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. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
  
- C. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

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.
- D. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, 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.
1. 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.
- E. 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 operation and maintenance manuals.
  2. Comply with requirements of newly prepared record Drawings in Division 01 Section "Project Record Documents."
- F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION

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 Product Data.
- B. Related Requirements:
  - 1. Division 01 Section "Closeout Procedures" for general closeout procedures.
  - 2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
  - 3. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:
  - 1. Number of Copies: Submit one set of marked-up record prints.
- B. Record Product Data: Submit one paper copy and 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.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Print (As-Built Drawings): 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

individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

- a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
  - b. Accurately record information in an acceptable drawing technique.
  - c. Record data as soon as possible after obtaining it.
  - d. Record and check the markup before enclosing concealed installations.
  - e. Cross-reference record prints to corresponding archive photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
- a. Dimensional changes to Drawings.
  - b. Revisions to details shown on Drawings.
  - c. Depths of foundations below first floor.
  - d. Locations and depths of underground utilities.
  - e. Revisions to routing of piping and conduits.
  - f. Revisions to electrical circuitry.
  - g. Actual equipment locations.
  - h. Duct size and routing.
  - i. Locations of concealed internal utilities.
  - j. Changes made by Change Order or Construction Change Directive.
  - k. Changes made following Architect's written orders.
  - l. Details not on the original Contract Drawings.
  - m. Field records for variable and concealed conditions.
  - n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Shop Drawings: Record shop drawings include, but are not limited to the following:

1. MEP coordination drawings.
  - a. Upon completion of the work, electronically update the coordination drawings with all changes associated with Construction Change Directives, Proposal Requests, Request for Information, or any other as-built revisions that have occurred throughout the duration of the project.
  - b. In addition to the above information, MEP Coordination Drawings shall comply with the following:
    - 1) Accurately record valve tag numbers and locations on the Record MEP Coordination Drawings for work of Divisions: 21, 22, and 23.
  - c. Prior to submission of MEP Coordination Drawings as Record Shop Drawings, the information shall be separated and organized onto individual sheets on the most current floor plan background as follows:
    - 1) Storm and sanitary (waste and vent) sewer piping and specialties.
    - 2) Domestic hot and cold-water piping, valves, and specialties.

- 3) Natural Gas piping, valves, and specialties.
  - 4) Chilled water piping, valves, and specialties.
  - 5) Heating hot water piping, valves, and specialties.
  - 6) Metal ductwork, dampers, and specialties.
2. Fire suppression drawings.
    - a. Accurately record valve tag numbers and locations on the Record Shop Drawings.
    - b. Refer to Division 21 for additional requirements.
  3. Fire alarm drawings.
  4. Building automation drawings.
  5. Permit sets from local authority having jurisdiction.

## 2.2 RECORD PRODUCT DATA

- A. 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.
- B. Format: Submit record Product Data as paper copy and 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.

## PART 3 - EXECUTION

### 3.1 RECORDING AND MAINTENANCE

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

END OF SECTION

SECTION 017900

DEMONSTRATION AND TRAINING

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. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment.
  - 3. Demonstration and training video recordings.
- B. Related Sections include the following:
  - 1. Divisions 02 through 33 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
  - 1. Inspect and discuss locations and other facilities required for instruction.
  - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
  - 3. Review required content of instruction.
  - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.4 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.

- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

## PART 2 - PRODUCTS

### 2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:
  - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
    - a. System, subsystem, and equipment descriptions.
    - b. Performance and design criteria if Contractor is delegated design responsibility.
    - c. Operating standards.
    - d. Regulatory requirements.
    - e. Equipment function.
    - f. Operating characteristics.
    - g. Limiting conditions.
    - h. Performance curves.
  - 2. Documentation: Review the following items in detail:
    - a. Emergency manuals.
    - b. Operations manuals.
    - c. Maintenance manuals.
    - d. Project Record Documents.
    - e. Identification systems.
    - f. Warranties and bonds.
    - g. Maintenance service agreements and similar continuing commitments.
  - 3. Emergencies: Include the following, as applicable:
    - a. Instructions on meaning of warnings, trouble indications, and error messages.
    - b. Instructions on stopping.
    - c. Shutdown instructions for each type of emergency.
    - d. Operating instructions for conditions outside of normal operating limits.
    - e. Sequences for electric or electronic systems.
    - f. Special operating instructions and procedures.
  - 4. Operations: Include the following, as applicable:
    - a. Startup procedures.
    - b. Equipment or system break-in procedures.



- c. Routine and normal operating instructions.
  - d. Regulation and control procedures.
  - e. Control sequences.
  - f. Safety procedures.
  - g. Instructions on stopping.
  - h. Normal shutdown instructions.
  - i. Operating procedures for emergencies.
  - j. Operating procedures for system, subsystem, or equipment failure.
  - k. Seasonal and weekend operating instructions.
  - l. Required sequences for electric or electronic systems.
  - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
  - b. Checking adjustments.
  - c. Noise and vibration adjustments.
  - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
  - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Inspection procedures.
  - b. Types of cleaning agents to be used and methods of cleaning.
  - c. List of cleaning agents and methods of cleaning detrimental to product.
  - d. Procedures for routine cleaning
  - e. Procedures for preventive maintenance.
  - f. Procedures for routine maintenance.
  - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
  - b. Repair instructions.
  - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
  - d. Instructions for identifying parts and components.
  - e. Review of spare parts needed for operation and maintenance.

### PART 3 - EXECUTION

#### 3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
  - 1. Schedule training with Owner, with at least fourteen days' advance notice.
- D. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.
- E. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION

SECTION 024119

SELECTIVE STRUCTURE 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.

- B. Related Requirements:

- 1. Division 01 Section "Summary" and "Work Restrictions" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.
- 2. Division 01 Section "Photographic Documentation" for preconstruction photographs.
- 3. Section 015639 "Temporary Tree and Plant Protection" for temporary protection of existing trees and plants that are affected by selective demolition.
- 4. Division 01 Section "Execution" and "Cutting and Patching" for cutting and patching procedures.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

#### 1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
  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 SUBMITTALS

- A. Qualification Data: For refrigerant recovery technician.
- B. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property, for environmental protection and for dust 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 and of Owner's partial occupancy of completed Work.
- D. Predemolition Photographs:
  1. Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by salvage and demolition operations.
  2. Comply with Section 013233 "Photographic Documentation".
  3. Submit before Work begins.
- 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.
- F. Warranties: Documentation indicated that existing warranties are still in effect after completion of selective demolition.
- G. Inventory: Submit a list of items that have been removed and salvaged.

1.7 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

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. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1. Hazardous materials will be removed by Owner before start of the Work.
  - 2. If suspected hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1.9 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:
  - 1. EPDM roofing system.
- B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

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 ANSI/ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped before starting selective demolition operations.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- D. Survey of Existing Conditions: Record existing conditions by use of measured drawings, preconstruction photographs and preconstruction recordings.
  - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
  - 1. Comply with requirements for existing services/systems interruptions specified in Section 011400 "Work Restrictions."
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
  - 1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
  - 2. Notify Owner to arrange to shut off indicated utilities with utility companies.
  - 3. 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.
  - 4. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated 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.
    - 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. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
    - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

- g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material.

### 3.3 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: 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.

### 3.4 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, to minimize disturbance of adjacent surfaces. 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 and portable fire-suppression devices for at least two 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.
- 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.
1. Comply with requirements for access and protection specified in Section 015000 "Temporary Facilities and Controls."
- 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. 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 and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.5 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. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.
- C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
- E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for the Removal of Resilient Floor Coverings."
1. Do not use methods requiring solvent-based adhesive strippers.



- F. Wall Coverings: Removal of existing wall coverings, where walls are to remain, is to be performed by individuals with experience in their removal.
  - 1. Use appropriate techniques as not to damage the paper facing of gypsum board substrates.
- G. 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 Division 9 for Sections with new roofing requirements.
  - 1. Remove existing roof membrane, flashings, copings, and roof accessories.
  - 2. Remove existing roofing system down to substrate.

### 3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction.
  - 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.
- B. Burning: Do not burn demolished materials.

### 3.7 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

SECTION 033053

MISCELLANEOUS 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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section specifies cast-in-place concrete, including reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. Related Sections include the following:
  - 1. Division 31 Section "Concrete Paving" for concrete pavement and walks.

1.3 SUBMITTALS

- A. General: In addition to the following, comply with submittal requirements in ACI 301.
- B. Product Data: For each type of product indicated.
- C. Design Mixtures: For each concrete mixture.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.
- B. Source Limitations: Obtain each type of cement 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.
- C. Comply with ACI 301, "Specification for Structural Concrete," including the following sections, unless modified by requirements in the Contract Documents:
  - 1. "General Requirements."
  - 2. "Formwork and Formwork Accessories."
  - 3. "Reinforcement and Reinforcement Supports."
  - 4. "Concrete Mixtures."
  - 5. "Handling, Placing, and Constructing."
- D. Comply with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORMWORK

- A. Furnish formwork and formwork accessories according to ACI 301.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

2.3 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, of greater compressive strength than the concrete, according to CRSI's "Manual of Standard Practice."
  - 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 zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.
  - 3. CMU (concrete masonry unit) is not allowed to be used.

2.4 CONCRETE MATERIALS

- A. Source Limitations:
  - 1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
  - 2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.
  - 3. Obtain aggregate from single source.
  - 4. Obtain each type of admixture from single source from single manufacturer.
- B. Cementitious Materials:
  - 1. Blended Hydraulic Cement: ASTM C595/C595M, Type II, portland-limestone cement.
- C. Normal-Weight Aggregate: ASTM C 33, graded, 1-inch (25-mm) nominal maximum aggregate size.
- D. Water: ASTM C 94; potable.

2.5 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, Type A.
  - 2. Retarding Admixture: ASTM C 494, Type B.
  - 3. High-Range, Water-Reducing Admixture: ASTM C 494, Type F

## 2.6 VAPOR RETARDERS

- A. Sheet Vapor Retarder: ASTM E 1745, Class A, not less than 10 mils thick. Include manufacturer's recommended adhesive or pressure-sensitive tape and detailing mastic.
  - 1. Products: Subject to compliance with requirements provide one of the following:
    - a. Fortifiber Building Systems Group; Moistop Ultra 10.
    - b. Raven Industries Inc.; Vapor Block VB 10.
    - c. Stego Industries, LLC; Stego Wrap, 10 Mil Class A.
    - d. W. R. Meadows; Perminator 10 Mil.

## 2.7 RELATED MATERIALS

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

## 2.8 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete. Though listed here this is not a curing material.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.

## 2.9 CONCRETE MIXTURES

- A. Comply with ACI 301 requirements for concrete mixtures and for proportioning design mixes. Prepare design mixes, proportioned according to ACI 301.
- B. Normal-Weight Concrete: For foundations:
  - 1. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.50.
  - 3. Slump Limit: 5 inches (125 mm) , plus or minus 1 inch (25 mm).
- C. Normal-Weight concrete for slabs and walls:
  - 1. Minimum compressive strength: 4000 psi (27.6 MPa) at 28 days.
  - 2. Maximum water – cementitious materials ratio: 0.45
  - 3. Slump limit: 4 inches (100 mm); 8 inches (200 mm) for concrete with verified slump of less than 3 inches (75 mm) before adding high-range water reducing admixture.

4. Air content: 6 percent  $\pm$  1 percent for exterior concrete only.

## 2.10 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.
  1. When air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.

## PART 3 - EXECUTION

### 3.1 FORMWORK

- A. Design, construct, erect, brace, and maintain formwork according to ACI 301.

### 3.2 VAPOR RETARDERS

- A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer's written instructions per, but not totally inclusive of, the following:
  1. Unroll vapor retarder with the longest dimension parallel with the direction of the concrete pour.
  2. Lap joints 6 inches and seal with manufacturer's recommended tape.
  3. Extend vapor retarder to the perimeter of the slab, lap up wall and terminate at the height of the slab.
  4. Seal the entire perimeter with manufacturers recommended tape.
  5. Seal all penetrations including pipes per manufacturers pipe boot detailing and other manufacturer details.
  6. Use reinforcing bar supports that eliminate or minimize the potential puncture of the vapor retarder.
  7. Repair all damaged areas with vapor retarding materials of same or better permeance, puncture and tensile properties.

### 3.3 STEEL REINFORCEMENT

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

### 3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

- B. Construction Joints: Locate and install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- 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-third of concrete thickness, as follows:
  - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with groover tool to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover marks on concrete surfaces.
  - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints: Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
  - 1. Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.

### 3.5 CONCRETE PLACEMENT

- A. Comply with ACI 301 for measuring, batching, mixing, transporting, and placing concrete.
- B. Do not add water to concrete during delivery, at Project site, or during placement.
- C. Consolidate concrete with mechanical vibrating equipment.

### 3.6 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding 1/4 inch (6 mm).
  - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm).
  - 1. Apply to concrete surfaces exposed to public view, prior to rubbed finish, or to be covered with a coating or covering material applied directly to concrete.
- C. Rubbed Finish: Apply the following rubbed finish, defined in ACI 301, to all smooth-formed finished as-cast concrete (all concrete surfaces exposed to view) as noted:
  - 1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
- D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed

surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

### 3.7 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Screed surfaces with a straightedge and strike off. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess moisture or bleedwater appears on surface.
  - 1. Do not further disturb surfaces before starting finishing operations.
- C. Scratch Finish: Apply scratch finish to surfaces indicated and surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes, unless otherwise indicated.
- D. Float Finish: Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, fluid-applied or direct-to-deck-applied membrane roofing, or sand-bed terrazzo.
- E. Trowel Finish: Apply a hard trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.
- F. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set methods. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.
- G. Nonslip Broom Finish: Apply a nonslip broom finish to surfaces indicated and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.

### 3.8 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 with ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure formed and unformed concrete for at least seven days by the following:
  - 1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days.

Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Tests: Perform according to ACI 301.
  - 1. Testing Frequency: One composite sample shall be obtained for each day's pour of each concrete mix exceeding 5 cu. yd. (4 cu. m) but less than 25 cu. yd. (19 cu. m), plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
  - 2. Testing Frequency: One composite sample shall be obtained for each 100 cu. yd. (76 cu. m) or fraction thereof of each concrete mix placed each day.

3.10 REPAIRS

- A. Remove and replace concrete that does not comply with requirements in this Section.

END OF SECTION



SECTION 042000

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 Unit Masonry Assemblies.
- B. Related Sections:
  - 1. Section 072726 "Fluid-Applied Membrane Air Barriers" for fluid-applied membrane air barrier applied at cavity wall face side of CMU.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
  - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
  - 2. Reinforcing Steel: Detail bending and placement of unit masonry reinforcing bars. Comply with ACI 315, "Details and Detailing of Concrete Reinforcement." Show elevations of reinforced walls.
  - 3. Fabricated Flashing: Detail corner units, end-dam units, and other special applications.
- C. Samples for Initial Selection on manufacturer's selection boards, in the form of small-scale units or as noted:
  - 1. Face brick.
  - 2. Colored mortar, sample kit.
- D. Samples for Verification: For each type and color of the following:
  - 1. Facebrick, in the form of straps of five or more bricks.
  - 2. Pigmented mortar. Make Samples using same sand and mortar ingredients to be used on Project.
  - 3. Weep holes/vents.

4. Accessories embedded in masonry.
  - E. Material Certificates: For each type and size of the following certifying that each material is in compliance. Include materials test reports for masonry units:
    1. Masonry units.
      - a. Include data on material properties.
      - b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
      - c. For exposed brick, include test report for efflorescence according to ASTM C 67.
      - d. For surface-coated brick, include test report for durability of surface appearance after 50 cycles of freezing and thawing per ASTM C 67.
      - e. For all masonry units, include data and calculations establishing average net-area compressive strength of units.
    2. Mortar and grout mixes, materials and admixtures.
    3. Reinforcing bars.
    4. Joint reinforcement.
    5. Anchors, ties and metal accessories.
    6. Masonry Membrane Flashing Compatibility Data: Masonry membrane flashings, fluid-applied membrane air & water resistive barriers over substrates, sealants and other related materials shall be compatible with one another under conditions of service and application, as demonstrated by masonry membrane flashing manufacturer based on testing and field experience.
  - F. 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.
  - G. 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.
  - H. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.
- 1.5 DELIVERY, STORAGE, AND HANDLING
- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
  - B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
  - C. Store aggregates where grading and other required characteristics can be maintained, and contamination avoided.

- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

#### 1.6 PROJECT CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
  - 1. Extend cover a minimum of 24 inches down both sides of walls and hold cover securely in place.
  - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.
- 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. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
- E. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6 and in Table 1 included below.
  - 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.

**TABLE I: COLD WEATHER REQUIREMENTS**

Temperature Range	Procedures
40 to 32 ° F (4 to 0 ° C)	<ol style="list-style-type: none"> <li>1. Heat mixing water or sand to produce mortar temperatures between 40 and 120 ° F (4 and 49 ° C).</li> <li>2. Cover masonry with a weather-resistant membrane for 48 hours after construction.</li> </ol>
32 to 25 ° F (0 to -4 ° C)	<ol style="list-style-type: none"> <li>1. Heat mixing water and sand to produce mortar temperatures between 40 and 120 ° F (4 and 49 ° C).</li> <li>2. Heat grout materials to produce grout temperatures between 40 and 120 ° F (4 and 49 ° C).</li> <li>3. Maintain mortar and grout above freezing until used in masonry.</li> <li>4. Cover masonry with a weather-resistant membrane for 48 hours after construction.</li> </ol>
25 to 20 ° F (-4 to -7 ° C)	<ol style="list-style-type: none"> <li>1. Heat mixing water and sand to produce mortar temperatures between 40 and 120 ° F (4 and 49 ° C).</li> <li>2. Heat grout materials to produce grout temperatures between 40 and 120 ° F (4 and 49 ° C).</li> <li>3. Maintain mortar and grout above freezing until used in masonry.</li> <li>4. Heat masonry units to 40 ° F (4 ° C) if grouting.</li> <li>5. Use heat on both sides of walls under construction.</li> <li>6. Cover masonry with insulating blankets or provide enclosure and heat for 48 hours after construction to prevent freezing.</li> <li>7. Install wind breaks when wind velocity exceeds 15 mi./h (25 km/h).</li> </ol>
20 ° F (-7 ° C) and Below	<ol style="list-style-type: none"> <li>1. Heat mixing water and sand to produce mortar temperatures between 40 and 120 ° F (4 and 49 ° C).</li> <li>2. Heat grout materials to produce grout temperatures between 40 and 120 ° F (4 and 49 ° C).</li> <li>3. Maintain mortar and grout above freezing until used in masonry.</li> <li>4. Heat masonry units to 40 ° F (4 ° C).</li> <li>5. Provide enclosures and use heat on both sides of walls under construction to maintain temperatures above 32 ° F (0 ° C) within the enclosures.</li> <li>6. Provide enclosure and heat to maintain temperatures above 32 ° F (0 ° C) for 48 hours after construction.</li> </ol>

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 f'm of 2,500 psi 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 in the standard. Do not use units where such defects will be exposed in the completed Work.
- C. Finish and Appearance:
  - 1. Interior and exterior finished concrete masonry unit's appearance shall exceed the finish requirements of ASTM C90, to require repair of chipped, cracked or broken units that have visible defects from a distance of ten (10) feet under diffused permanent lighting. Repair or replacement of masonry units is covered in Part 3 Tolerances in this section.
- D. Fire-Resistance Ratings: Where indicated, provide units that comply with requirements for fire-resistance ratings indicated as determined by testing according to ASTM E 119, by equivalent masonry thickness, or by other means, as 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. For ends of sills and caps and for similar applications that would otherwise expose unfinished surfaces, provide units without cores or frogs and with exposed surfaces finished.
  - 3. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
  - 4. Provide bullnose units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C 90.
  - 1. Density Classification: Medium weight unless otherwise indicated.
  - 2. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
  - 3. Exposed Faces: Provide color and texture matching the range represented by Architect's sample.
- C. Concrete Building Brick: ASTM C 55.
  - 1. Density Classification: Medium weight.

2.5 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.
  5. Provide special shapes as indicated on drawings.
- B. Clay Face Brick: Facing brick complying with ASTM C 216.
1. Basis of Design: Subject to compliance with requirements, provide facebrick by **Belden Brick** or comparable products by one of the following:
    - a. Glen Gary Brick Company.
  2. Grade: SW.
  3. Type: FBX.
  4. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 3000 psi.
  5. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested per ASTM C 67.
  6. Efflorescence: Provide brick that has been tested according to ASTM C 67 and is rated "not effloresced."
  7. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 11-5/8 inches long.
  8. Application: Use where brick is exposed unless otherwise indicated.
  9. Where shown to "match existing," provide face brick matching color range, texture, and size of existing adjacent brickwork.

2.6 MORTAR AND GROUT MATERIALS

- A. Colored Cement Product: Packaged blend made from mortar cement and mortar pigments, all complying with specified requirements, and containing no other ingredients.
1. Colored Mortar Cement:
    - a. Products: Subject to compliance with requirements, provide one of the following:
      - 1) Fairborn Cement Company, Colored MIAMI Mortar Cement.
      - 2) Lafarge Holcim US.; Holcim Mortamix Rainbow Custom Color Mortar Cement.
      - 3) Preblended mortar mix with sand:
        - a) SPEC MIX; Colored Mortar Cement & Sand Masonry Mortar (80 lb. bags and 3000 lb. bulk bag mix for use in silo system).
  2. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.

3. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979. Use only pigments with a record of satisfactory performance in masonry mortar.
  - a. Pigments shall not exceed 5 percent of masonry cement or mortar cement by weight.
  - b. Use only colored cement products.
  - c. Color: to be selected from manufacturer's full range of colors.

B. Aggregate for Mortar: ASTM C 144.

1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
2. For joints less than 1/4-inch-thick, use aggregate graded with 100 percent passing the No. 16 sieve.
3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.

C. Aggregate for Grout: ASTM C 404.

D. Water: Potable.

## 2.7 REINFORCEMENT

A. Uncoated-Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, Grade 60.

B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and hold reinforcing bars in cells at locations indicated. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Heckmann Building Products Inc.; No. 376 Rebar Positioner.
  - b. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
  - c. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

C. Masonry Joint Reinforcement, General: ASTM A 951/A 951M.

1. Interior Walls: Mill galvanized, carbon steel.
2. Exterior Walls: Hot-dip galvanized, carbon steel.
3. Wire Size for Side Rods: 0.187-inch diameter.
4. Wire Size for Cross Rods: 0.148-inch diameter.
5. Wire Size for Veneer Ties: 0.187-inch diameter.
6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

D. Masonry Joint Reinforcement for Single-Wythe Masonry: Ladder type with single pair of side rods.

E. Masonry Joint Reinforcement for Multiwythe Masonry:

1. Ladder type with 1 side rod at each face shell of hollow masonry units more than 4 inches wide, plus 1 side rod at each wythe of masonry 4 inches wide or less.
2. Adjustable (two-piece) type, either ladder or truss design, with one side rod at each face shell of backing wythe and with separate adjustable ties with pintle-and-eye connections having a

maximum adjustment of 1-1/4 inches. Size ties to extend at least halfway through facing wythe but with at least 5/8-inch cover on outside face.

## 2.8 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated.
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M; with ASTM A 153/A 153M, Class B-2 coating.
  2. Stainless-Steel Wire: ASTM A 580/A 580M, Type 304.
  3. Galvanized Steel Sheet: ASTM A 653/A 653M, Commercial Steel, G60 (Z180) zinc coating.
  4. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
  5. Stainless-Steel Sheet: ASTM A 666, Type 304.
  6. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
  7. Stainless-Steel Bars: ASTM A 276 or ASTM a 666, Type 304.
- B. Wire Ties, General: Unless otherwise indicated, size wire ties to extend at least halfway through veneer but with at least 5/8-inch cover on outside face. Outer ends of wires are bent 90 degrees and extend 2 inches parallel to face of veneer.
- C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.
1. Z-shaped ties with ends bent 90 degrees to provide hooks not less than 2 inches long may be used for masonry constructed from solid units.
  2. Where wythes do not align, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches.
  3. Wire: Fabricate from 3/16-inch-diameter, hot-dip galvanized steel wire.
- D. Partition Top Anchors: 0.105-inch- thick metal plate with 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.
- E. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist tension and compression forces perpendicular to plane of wall, for attachment over sheathing to wood or metal studs, and as follows:
    - a. Structural Performance Characteristics: Capable of withstanding a 100-lbf load in both tension and compression without deforming or developing play in excess of 0.0625 inch.
  2. Screw-Attached, Masonry-Veneer Anchors: Units consisting of a wire tie and a metal barrel style screw anchor section. Provide manufacturer's standard screw type appropriate for connecting to substrate.
    - a. Products: Subject to compliance with requirements, provide one of the following:
      - 1) Heckman Building Products, Inc.; Pos-I-Tie with Thermal Wing Nut and self-drilling # 668-H135 Brick Veneer to Steel Stud Screw for use with steel stud backup.



- 2) Heckman Building Products, Inc.; Pos-I-Tie with Thermal Wing Nut and #668-LE415 Brick Veneer to Concrete/Block Screw for use CMU or Concrete backup.
  - 3) Hohmann & Barnard, Inc.; Thermal 2-Seal Wing Nut Anchor for use with steel stud backup.
  - 4) Hohmann & Barnard, Inc.; Thermal Concrete 2-Seal Wing Nut Anchor for use with concrete and CMU backup.
  - 5) Wire-Bond; Sure Tie WS Anchoring System Thermal with #4522 SureTie Anchor, #4590 Thermal Grip Washer and #4515 Sure Tie WS Adjustable Double Hook for use with steel stud backup.
  - 6) Wire-Bond; Sure Tie WS Tapcon Thermal with #4532 SureTie WS Tapcon, #4590 Thermal Grip Washer and #4515 Sure Tie WS Adjustable Double Hook for use with concrete and CMU backup.
- b. Anchor Section: Corrosion-resistant, eye-screw designed to receive wire tie. Eye-screw has barrel that seats directly against framing and is same thickness as insulation plus sheathing and includes gasketed EPDM washer head that sits tight against wall sheathing.
  - c. Wire Ties: Triangular shaped wire ties fabricated from 0.187-inch-diameter, hot-dip galvanized steel wire.
  - d. Insulation Washer: Manufacturer's plastic wedge shaped for flat insulation washer pressed over the outboard end of slotted anchor and held tightly in place by wire tie.

## 2.9 EMBEDDED FLASHING MATERIALS

- A. Masonry Metal Flashing: Provide metal flashing complying with Division 07 Section – Sheet Metal Flashing and Trim, and as follows:
  1. Stainless Steel: ASTM A 240/A 240M or ASTM A 666, Type 304, thickness as indicated.
  2. Masonry Metal Flashing (General Use) - Through-Wall Flashing, Counter Flashing and Inside /Outside Corners: Fabricate from .030 inches (22 gauge), type 304 stainless steel.
    - a. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Fabricate to profiles indicated.
    - b. Through-Wall Flashing to extend back to face of sheathing and have leg turned up minimum 4 inches.
    - c. Provide shop fabricated inside and outside corners and any custom shapes as indicated on drawings.
    - d. Fabricate inside and outside corners of through wall flashing and counter flashing as single piece with welded miter seams.
      - 1) At inside corners, extend 6 inches at the outer face of masonry in each direction.
      - 2) At exterior corners, extend 6 inches at the face of the backup structure, Exterior sheathing or CMU, in each direction.
    - e. Fabricate through-wall flashing with snaplock receiver on exterior face where indicated to receive counterflashing.
    - f. 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. Preformed Drip Edges (Drip Plate): Fabricate from 0.0162 inch (26 gauge), type 304 stainless steel.
    - a. Fabricate metal drip edges from stainless steel. Extend 1/8 inch out from wall, with outer edge bent down 30 degrees and hemmed.
      - 1) Hohmann and Barnard, Inc.: Standard Drip Plate DP, 3-1/2 inches wide.
  4. Preformed End Dams at Lintels: For use with Masonry Membrane Flashing at steel lintels and where indicated. Fabricate from 0.0162 inch (26 gauge), type 304 stainless steel.
    - a. Provide custom end dams to match profiles of end dam shapes indicated on drawings.
      - 1) Custom end dams shall have soldered or welded seams.
      - 2) Custom end dam shall be fabricated 12 inches in length, minimum.
    - b. Provide minimum size of 3-inch x 3-inch x 3-inch at head flashing conditions.
      - 1) Hohmann and Barnard: Stainless Steel Corners and End Dams can be used where they meet specified size and requirements.
    - c. Fabricate larger sizes as required for conditions and as detailed.
    - d. Solder all metal flashing seams at corners.
- B. Masonry Membrane Flashing
1. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a 0.040-inch polyester-reinforced ethylene interpolymer alloy.
    - a. Products: Subject to compliance with requirements, provide one of the following:
      - 1) Hohmann & Barnard, Inc.; Flex-Flash.
      - 2) Hyload: Flashing Membrane.
      - 3) Dupont: Thru-wall Flashing.
    - b. Accessories:
      - 1) Primer: Recommended by manufacturer.
        - a) Utilize supplemental spray adhesive recommended by manufacturer when additional adhesion is required.
      - 2) Sealants: Approved by flashing manufacturer and compatible with Fluid-Applied Membrane Barrier manufacturer.
- C. 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.
- E. Termination Bars for Masonry Flashing: Type 304 stainless steel sheet 1/8 inch-thick by 1-1/8 inch by 8-foot-long with 1/4 inch holes spaced at 8 inches on center.

1. Hohmann & Barnard, Inc.; T1- Termination Bar.

## 2.10 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 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, organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).
- D. Weep/Vent Products:
  1. 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. Products:
    - a. Advanced Building Products, Inc.; Mortar Maze weep vent.
    - b. Heckmann Building Products, Inc.; No. 85 Cell Vent.
    - c. Hohmann & Barnard, Inc.; Quadro-Vent.
    - d. Wire-Bond; Cell Vent.
    - e. Sandel; Cell Vent.
  2. Round Plastic Weep: Medium-density polyethylene, 3/8 inch OD by 4 inches long with brass mesh screen and cotton wick.
    - a. Use only where indicated, where cellular weep/vent cannot to be used.
    - b. Product: Hohmann & Barnard, Inc. #341, W/S.
- E. Cavity Drainage Material: 2-inch thick x 10 inch high, nonabsorbent mesh, made from polymer strands, shaped to maintain drainage at weep holes without being clogged by mortar droppings. Provide 1-1/2 inch or 1 inch thick x 10 inch high mesh to fill cavity space when it is less than 2 inches. Subject to compliance with requirements, provide products by one of the following manufacturers:
  1. Mortar Net USA, Ltd.
  2. Advanced Building Products, Inc.: Mortar Break DT.
  3. Keene Building Products: Keenstone Cut.
- G. Backer Rod: ASTM C-1330, Type C, closed cell polyethylene round rod to close cavity at jamb conditions.

## 2.11 RIGID INSULATION

- A. This insulation is for use in the portion of cavity wall construction that is below the through wall flashing.
- B. Extruded-Polystyrene (XPS) Board Insulation: ASTM C 578, Type X, closed-cell product extruded with an integral skin.
  1. Manufacturer/Product:

- a. Dow: STYROFOAM™ Brand CAVITYMATE™ Exterior Wall Insulation
  - b. Owens Corning: FOAMULAR® CW15
  - c. DiversiFoam Products: CertiFoam 15
2. Size: 48 inch by 96 inch, utilize 16 inch by 96 inch with C.M.U. backup.
  3. Thickness/R Value: 3 inch/R Value 15.

## 2.12 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.
    - b. EaCo Chem, Inc.
    - c. ProSoCo, Inc.

## 2.13 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 mortar cement mortar only. Masonry cement is not permitted.
  3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, 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 exterior masonry above grade and below grade or in contact with earth, use Type S.
  2. For reinforced masonry, use Type S.
  3. For mortar parge coats, use Type S.
  4. For interior applications where another type is not indicated, use Type N.
- D. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with table 1.15.1 in TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
  2. Proportion grout in accordance with ASTM C 476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2500 psi. Utilize coarse grout.
  3. Provide grout with a slump of 10 to 11 inches as measured according to ASTM C 143/C 143M.

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 work.
  - 2. Verify that foundations are within tolerances specified.
  - 3. Verify that reinforcing dowels are properly placed.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION RELATED TO AIR BARRIER

- A. Project will have fluid-applied Membrane Air Barrier material applied to the cavity side of the CMU. Special attention and care must be taken to provide a smooth, filled surface to receive the membrane. The care is necessary to insure the design performance of the selected materials. Concrete masonry unit (CMU) wall shall be prepared as follows to accept the air and vapor barrier:
  - 1. Surfaces shall be free of contaminants such as grease, oil and wax on surfaces to receive membrane.
  - 2. The CMU surfaces shall be free from projections.
  - 3. Strike all mortar joints flush to the face of the concrete block.
  - 4. Fill all voids and holes greater than ¼ inch across at any point with mortar, sealant or other approved fill material.
  - 5. Surface irregularities exceeding ¼ inch in height or sharp to touch shall be ground flush or made smooth.
  - 6. Fill around all penetrations with mortar, sealant or other approved fill material and strike flush.
  - 7. If the surfaces cannot be made smooth to the satisfaction of the Architect, it will be the responsibility of the trade to alternatively apply a parge coat (typically one-part cement to three parts sand) over the entire surface to receive air and vapor barrier membrane.
  - 8. Remove mortar droppings on brick ties, shelf angles, brick shelves or other horizontal obstructions.
- B. Fill cracks, gaps and joints exceeding ¼ inch width with fill compound or paintable sealant.
- C. Fill rough gaps around pipe, conduit and similar penetrations with mortar, non-shrink grout, fill compound or polyurethane foam sealant shaved flush.

3.3 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.

- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match the construction immediately adjacent to opening.
- D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
  - 1. Mix units from several pallets or cubes as they are placed.
- F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.
- G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

### 3.4 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 exposed 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. Do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.

2. 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.
  3. 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.
  4. 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.
- D. Concrete Masonry Unit work exposed at the building's interior and exterior will be required to meet standards that exceed ASTM C90, Item 7 Finish and Appearance parts 7.2 and 7.2.1.
1. Chips or cracks of any size that are visible from a distance of 10-feet, under any exterior daylighting condition and under diffused permanent lighting interior conditions will require patching with mortar. Repair must be done as that they blend in with the surface of the masonry unit.
  2. Repairs to colored decorative CMU must be done with matching colored mortar.
  3. Decorative CMU that cannot be patched so that chips or cracks are not visible, under conditions described above, will need to be replaced.
  4. At CMU that is to be painted, repairs are to be made prior to finish paint preparations being applied.
  5. All horizontal and vertical mortar joints are to be neatly struck and free of fins protruding from them.

### 3.5 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 CMU Masonry: Unless otherwise indicated, lay exposed masonry to match existing bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Bond Pattern for Facebrick: Unless otherwise indicated, lay exposed masonry in bond to match existing; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. 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.
- E. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. Cover work at the end of each shift. 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.
- F. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- 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 non-load-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
  - 1. Install compressible filler in joint between top of partition and underside of structure above.
  - 2. 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. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Fire-Resistive Joint Systems."
  - 4. At non-rated partitions indicated to be sealed tight, provide compressible filler, mineral wool, mortar and/or sealant to seal all penetrations, voids or joints to resist the passage of smoke.
- J. Slope mortar fill towards exterior at base flashing locations indicated to facilitate drainage of water from cavity.

### 3.6 MORTAR BEDDING AND JOINTING

- A. Lay hollow brick and CMUs as follows:
  - 1. With face shells fully bedded in mortar and with head joints of depth equal to bed joints.
  - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
  - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
  - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
  - 1. Provide flush struck joints at walls to receive waterproofing and fluid applied air barrier.
- E. Dissimilar Materials: Provide continuous bond breaker material (building paper) at horizontal joints between brick and dissimilar materials. Rake mortar joints to a depth of 3/8 inch and provide sealant or repoint.

### 3.7 COMPOSITE MASONRY

- A. Bond wythes of composite masonry together using one of the following methods:
  - 1. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
    - a. Where bed joints of both wythes align, use ladder-type reinforcement extending across both wythes.



- b. Where bed joints of wythes do not align, use adjustable (two-piece) type reinforcement.
- 2. Header Bonding: Provide masonry unit headers extending not less than 3 inches into each wythe. Space headers not over 8 inches clear horizontally and 16 inches clear vertically.
- B. Bond wythes of composite masonry together using bonding system indicated on Drawings.
- C. Collar Joints: Solidly fill collar joints by parging face of first wythe that is laid and shoving units of other wythe into place.
- D. Corners: Provide interlocking masonry unit bond in each wythe and course at corners unless otherwise indicated.
  - 1. Provide continuity with masonry joint reinforcement at corners by using prefabricated L-shaped units as well as masonry bonding.
- E. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, bond walls together as follows:
  - 1. Provide continuity with masonry joint reinforcement by using prefabricated T-shaped or L-shaped units.

### 3.8 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
  - 1. Masonry Joint Reinforcement: Installed in horizontal mortar joints.
    - a. Where one wythe is of clay masonry and the other of concrete masonry, use adjustable (two-piece) type reinforcement to allow for differential movement regardless of whether bed joints align.
  - 2. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.
- C. Sequence and coordinate work with the installation of the air and water resistive barrier.
- D. Installing Cavity-Wall Insulation (Continuous Insulation per ASHRAE 90.1.): Apply continuous across all structural members without thermal bridges other than fasteners and service openings. Install in a manner consistent with an accepted NFPA 285 assembly. Where required, fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
  - 1. Confirm complete installation of air barrier prior to installation of insulation.
  - 2. Cut slots to fit tight around any penetrations and attach over sheathing and air and water resistive barrier membrane with screw attached masonry anchors.
  - 3. Provide continuous bead of sealant at entire perimeter of insulation board.
  - 4. Fill cracks and open gaps in insulation board with compatible crack sealer.
  - 5. Install masonry-veneer anchor with plastic insulation washer to provide tight fit to hold insulation tight to sheathing.

6. Cavity wall insulation is not intended to be exposed for extended periods of time (i.e.: in excess of 60 days) without adequate protection. Protect exposed insulation per manufacturer's instructions.
7. Cut top of insulation to slope towards exterior at flashing locations indicated.
8. At CMU backup, install insulation so masonry joint reinforcement occurs at insulation seams and utilizes rain barrier clip. Maximum spacing at 16 inches o.c.

### 3.9 ANCHORING MASONRY VENEERS

- A. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:
1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
  2. Size and install anchor screw fastener with appropriate length for slotted wing nut and insulation washer. Install insulation slotted wing nut and washer to have tight friction fit to insulation boards and hold them tightly against the sheathing. If manufacturer's insulation washer is a 'flat' type, provide multiple washers as required for a tight installation.
  3. Confirm solid anchorage to metal wall framing. If solid anchorage does not occur, remove anchor and seal hole with sealant compatible with the fluid applied membrane air barrier system.
  4. Embed tie sections in masonry joints. Provide not less than 2-1/4 inches of air space between back of masonry veneer and face of sheathing/insulation.
  5. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
  6. Space anchors as indicated, but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally with not less than 1 anchor for each 1.75 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 16 inches, around perimeter. Do not install anchors through flashing materials.

### 3.10 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.
    - a. Where 12-inch-high units are utilized, space reinforcement not more than 24 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, unless indicated otherwise.
- D. Provide continuity at corners by using prefabricated L-shaped units.

3.11 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.

3.12 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 as follows:
  - 1. Install preformed control-joint gaskets designed to fit standard sash block.
  - 2. Where exposed to view, install temporary foam-plastic filler in head joints and remove filler when unit masonry is complete for application of sealant.
- C. Form expansion joints in brick as follows:
  - 1. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of compressible filler, sealant and backer rod specified in Division 07 Section "Joint Sealants."
- D. Provide horizontal, pressure-relieving joints by inserting a compressible filler of width required for installing sealant and backer rod specified in Division 07 Section "Joint Sealants," but not less than 3/8 inch minimum.
  - 1. Locate horizontal, pressure-relieving joints beneath shelf angles supporting masonry.

3.13 LINTELS

- A. Install steel lintels where openings occur.
- B. Refer to drawings for:
  - 1. Minimum bearing requirements at each jamb.
  - 2. Maximum opening sizes that do not require lintels.

3.14 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, where parapets abut vertical walls, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to promote upward flow of air in cavities, and where indicated.

1. Flashing: Utilize manufacturers recommended primer for proper adhesion.

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, adhere flashing to masonry unit or metal flashing and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
2. At base of multiwyth install Base-Wall Flashing as shown on the Drawings.
  - a. Continuous composite flashing product is to be installed as to connect the foundation waterproofing system to the back-up wall's air barrier system. This flashing occurs below where through wall flashing extends out to face of wall.
  - b. Use manufacturer's adhesive products for additional adhesion.
  - c. Install continuous termination bar fastened at 8 inches o.c. with a continuous bead of sealant cant along the top. Coat / cover each termination bar fastener with sealant.
  - d. Flash over Base-Wall Flashing as detailed.
3. At base of multiwyth masonry walls, including cavity walls and extend Masonry Metal Flashing through outer wythe, across air space and up face of inner wythe minimum of 8 inches.
  - a. Lap joints between metal flashing 4 inches with a continuous bead of sealant. Provide a loose lock expansion joint at every third joint or at maximum 30 feet.
  - b. Lap metal flashing with metal corner pieces with a continuous bead of sealant.
  - c. Corner pieces are to have soldered joints.
  - d. Continuously flash over Masonry Metal Flashing with thermoplastic Masonry Membrane Flashing. Extend up inner wythe surface as shown. Maintain 24 inches minimum between masonry membrane flashing laps and metal flashing laps.
  - e. Use manufacturer's adhesive products for additional adhesion.
  - f. Install continuous termination bar fastened at 8" on center with continuous sealant cant along the top. Coat / cover each termination bar fastener with sealant.
4. At lintels and head conditions, extend thermoplastic Masonry Flashing through veneer, over lintel and across air space and up face of sheathing minimum 8 inches.
  - a. Use manufacturer's adhesive products for additional adhesion.
  - b. Provide sloped back in cavity to provide positive drainage. Refer to drawings.
  - c. Install continuous termination bar fastened at 8" on center with continuous sealant cant along the top. Coat / cover each termination bar fastener with sealant.
  - d. Extend flashing a minimum of 8 inches, unless indicated otherwise, into masonry at each end and install preformed end dams. End dams shall be installed a minimum of one full masonry unit module or one- and one-half masonry unit modules depending on coursing.
  - e. Provide sealant at termination of flashing at end dams.
  - f. Provide additional flashing at ends of flashing to close off ends and prohibit moisture from getting behind flashing and weather barriers where required.
5. Preformed Metal Flashing Products: Install Metal Flashing drip edges beneath Masonry Flashing at exterior face of wall where indicated. Stop thermoplastic Masonry Flashing 1/4 inch minimum to 3/8 inch maximum from outside face of wall and adhere flashing to top of metal drip edge. Provide continuous sealant at edge of flashing and tool sealant so to not inhibit water flow to the exterior. Drip should occur at face of wall. Flat surface should not extend out past face of wall.

- a. Utilize preformed inside and outside corners.
  - b. Lap Metal Flashing drip edges 3 inches at ends in full bed of sealant. Provide sealant at edge of overlap.
  - c. At lap, notch metal flashing 3 inches at the hemmed drip edge to provide interlocking flush joint with adjacent drip.
6. Extend Masonry Flashing 1/4 inch from face of wall where Metal Flashing drip edges are not utilized.
  7. Lap continuous Masonry Flashing a minimum of 8 inches. Coat the contacting surfaces with manufacturer's recommended supplemental adhesive or sealant. Apply continuous sealant at edges of all laps. Utilize rollers to ensure full adhesion of flashing to substrate.
  8. Provide additional masonry flashing at inside and outside corners to lap ends of adjacent flashing terminations.
  9. End Dams: Provide end dams at the following locations.
    - a. At all terminations of flashings unless noted otherwise. Provide additional length of flashing to fold and form into end dam.
    - b. At openings at base of walls such as doors.
    - c. At all inside corners.
  10. Provide continuous sealant at underside of metal drip edges and under flashing where lintel extends into bed joint at jamb conditions.
  11. Through – Wall and Counter Flashing: Where through – wall flashing is indicated, Metal Flashing or Masonry Flashing, lap adjacent pieces a minimum of 3 inches in full bed of sealant. Trim flashing so lap is not present on face of wall and receiver. Seal edges of flashing.
    - a. Where Metal Flashing is shown with reglet receiver, install counter flashing in receiver with stainless steel fasteners at 16 inches o.c. and seal fasteners. Stagger counter flashing minimum of 24 inches from through wall flashing splice joint
    - b. Inside and outside corners: Overlap through wall flashing in full bed of sealant and miter / trim flashing as required to provide water tight installation. Install additional masonry membrane flashing at corners extending 6 inches in each direction.
- C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.
- D. Install weep/vents in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
1. Space weep/vent holes 24 inches o.c. unless otherwise indicated.
- E. Place cavity drainage material at base of wall in cavities and where flashing and weeps are indicated.
- F. Where grade varies, and flashing is stepped, provide minimum of 12 inches horizontal overlap with flashing between lower and upper flashing. Provide prefabricated end dams at ends.

### 3.15 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie,

- and support forms to maintain position and shape during construction and curing of reinforced masonry.
2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other 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.

### 3.16 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas, as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.

### 3.17 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 masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.
  6. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces.

3.18 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.

END OF SECTION

SECTION 051200

STRUCTURAL STEEL FRAMING

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. Structural steel.

- B. Related Requirements:

- 1. Section 053100 "Steel Decking" for field installation of shear stud connectors through deck.
- 2. Section 055000 "Metal Fabrications" for steel lintels and shelf angles not attached to structural-steel frame, miscellaneous steel fabrications and other steel items not defined as structural steel.
- 3. Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" and Section 099600 "High-Performance Coatings" for painting requirements.

1.3 DEFINITIONS

- A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in ANSI/AISC 303.

- B. Heavy Sections: Rolled and built-up sections as follows:

- 1. Shapes included in ASTM A6 with flanges thicker than 1-1/2 inches.
- 2. Welded built-up members with plates thicker than 2 inches.
- 3. Column base plates thicker than 2 inches.

1.4 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

- B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.



1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.6 SUBMITTALS

- A. Product Data:

1. Structural-steel materials.
2. High-strength, bolt-nut-washer assemblies.
3. Anchor rods.
4. Threaded rods.
5. Shop primer.
6. Galvanized repair paint.

- B. Shop Drawings: Show fabrication of structural-steel components.

1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
2. Include embedment Drawings.
3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
5. Identify members not to be shop primed.

- C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1 for each welded joint whether prequalified or qualified by testing, including the following:

1. Power source (constant current or constant voltage).
2. Electrode manufacturer and trade name, for demand-critical welds.

- D. Qualification Data: For Installer, fabricator, shop-painting applicators, and testing agency.

- E. Welding certificates.

- F. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

- G. Mill test reports for structural-steel materials, including chemical and physical properties.

- H. Product Test Reports: For the following:

1. Bolts, nuts, and washers, including mechanical properties and chemical analysis.
2. Shear stud connectors.
3. Non shrink grout.

- I. Survey of existing conditions.

- J. Source quality-control reports.

- K. Field quality-control reports.

1.7 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category BU or is accredited by the IAS Fabricator Inspection Program for Structural Steel (Acceptance Criteria 172).
- B. Installer Qualifications: A qualified Installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
- C. Shop-Painting Applicators: Qualified in accordance with AISC's Sophisticated Paint Endorsement P1, Endorsement P2 or to SSPC-QP 3.
- D. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.1.
  - 1. Coordinate welding personnel qualification certificates with types of welds and procedures being used on the project.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
  - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
  - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
  - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
  - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F3125, Grade F1852 bolt assemblies and for retesting bolt assemblies after lubrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Comply with applicable provisions of the following specifications and documents:
  - 1. ANSI/AISC 303.
  - 2. ANSI/AISC 360.
  - 3. RCSC's "Specification for Structural Joints Using High-Strength Bolts."
- B. Connection Design Information:
  - 1. Option 1: Connection designs have been completed and connections indicated on the Drawings.
  - 2. Option 2: Design connections and final configuration of member reinforcement at connections in accordance with ANSI/AISC 303 by fabricator's qualified professional engineer.

- a. Use allowable stress design; data are given at service load level.

- C. Moment Connections: Fully restrained.
- D. Construction: Moment frame, shear wall system.

## 2.2 STRUCTURAL-STEEL MATERIALS

- A. Channels, Angles ASTM A36.
- B. Plate and Bar: ASTM A36.
- C. Cold-Formed Hollow Structural Sections: ASTM A500, Grade B or ASTM A1085 structural tubing.
- D. Steel Pipe: ASTM A53, Type E or Type S, Grade B.
  - 1. Weight Class: As indicated.
  - 2. Finish: Black except where indicated to be galvanized.
- E. Welding Electrodes: Comply with AWS requirements.

## 2.3 BOLTS AND CONNECTORS

- A. High-Strength A325 Bolts, Nuts, and Washers: ASTM F3125, Grade A325, Type 1, heavy-hex steel structural bolts; ASTM A563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F436, Type 1, hardened carbon-steel washers; all with plain finish.
- B. Shear Stud Connectors: ASTM A108, AISI C-1015 through C-1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.

## 2.4 RODS

- A. Unheaded Anchor Rods: ASTM A36.
  - 1. Configuration: Hooked.
  - 2. Nuts: ASTM A563 heavy hex carbon steel.
  - 3. Plate Washers: ASTM A36 carbon steel.
  - 4. Washers: ASTM F436, Type 1, hardened carbon steel.
  - 5. Finish: Plain.
- B. Threaded Rods: ASTM A36.
  - 1. Nuts: ASTM A 63 hex carbon steel.
  - 2. Washers: ASTM F436, Type 1, hardened carbon steel.
  - 3. Finish: Plain.

## 2.5 PRIMER

- A. Steel Primer:

1. Comply with Section 099113 "Exterior Painting," Section 099123 "Interior Painting," and Section 099600 "High-Performance Coatings" where topcoat is required.

## 2.6 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate in accordance with ANSI/AISC 303 and to ANSI/AISC 360.
  1. Camber structural-steel members where indicated.
  2. Fabricate beams with rolling camber up.
  3. Identify high-strength structural steel in accordance with ASTM A6 and maintain markings until structural-steel framing has been erected.
  4. Mark and match-mark materials for field assembly.
  5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
  1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted in accordance with SSPC-SP 2.
- F. Shear Stud Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Weld using automatic end welding of headed-stud shear connectors in accordance with AWS D1.1 and manufacturer's written instructions.
- G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.
  1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
  2. Baseplate Holes: Cut, drill, or punch holes perpendicular to steel surfaces.
  3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

## 2.7 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for type of bolt and type of joint specified.
  1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
  1. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

2.8 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123.
  - 1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
  - 2. Galvanize lintels, attached to structural-steel frame and located in exterior walls.

2.9 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 receive sprayed fire-resistive materials (applied fireproofing).
  - 4. Galvanized surfaces unless indicated to be painted.
- B. Surface Preparation of Steel: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces in accordance with the following specifications and standard:
  - 1. SSPC-3.
- C. Priming: Immediately after surface preparation, apply primer in accordance with manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.10 SOURCE QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.
  - 1. Allow testing agency access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
  - 2. Bolted Connections: Inspect and test shop-bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
  - 3. Welded Connections: Visually inspect shop-welded connections in accordance with AWS D1.1 and the following inspection procedures, at testing agency's option:
    - a. Liquid Penetrant Inspection: ASTM E165.
    - b. Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
    - c. Ultrasonic Inspection: ASTM E164.
    - d. Radiographic Inspection: ASTM E94.
  - 4. In addition to visual inspection, test and inspect shop-welded shear stud connectors in accordance with requirements in AWS D1.1 for stud welding and as follows:
    - a. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear stud connector.
    - b. Conduct tests in accordance with requirements in AWS D1.1 on additional shear stud connectors if weld fracture occurs on shear stud connectors already tested.

5. Prepare test and inspection reports.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
  1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Provide temporary shores, guys, braces, and other supports during erection as required to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated on Drawings.
  1. Do not remove temporary shoring supporting composite deck construction and structural-steel framing until cast-in-place concrete has attained its design compressive strength.

#### 3.3 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and in accordance with ANSI/AISC 303 and ANSI/AISC 360.
- B. Baseplates, Bearing Plates and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
  1. Set plates for structural members on wedges, shims, or setting nuts as required.
  2. Weld plate washers to top of baseplate.
  3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
  4. Promptly pack shrinkage-resistant grout solidly between bearing surfaces and plates, so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for grouting.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges, Section 7.13 and verify to be compatible with other entities which interface with Structural Steel.
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure. Slope roof framing members to slopes indicated on Drawings.
  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. Do not use thermal cutting during erection.
- G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

### 3.4 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt and joint type specified.
1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1 and AWS D1.8 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
1. Comply with ANSI/AISC 303 and ANSI/AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
  2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
  3. Assemble and weld built-up sections by methods that maintain true alignment of axes without exceeding tolerances in ANSI/AISC 303 for mill material.

### 3.5 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a special inspector to perform the following special inspections:
1. Verify structural-steel materials and inspect steel frame joint details.
  2. Verify weld materials and inspect welds.
  3. Verify connection materials and inspect high-strength bolted connections.
- B. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
1. Bolted Connections: Inspect bolted connections in accordance with RCSC's "Specification for Structural Joints Using High-Strength Bolts."
  2. Welded Connections: Visually inspect field welds in accordance with AWS D1.1.
    - a. In addition to visual inspection, test and inspect field welds in accordance with AWS D1.1 and the following inspection procedures, at testing agency's option:
      - 1) Liquid Penetrant Inspection: ASTM E165.
      - 2) Magnetic Particle Inspection: ASTM E709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
      - 3) Ultra Sonic Inspection: ASTM E165.
      - 4) Radiographic Inspection: ASTM E94.

3.6 PROTECTION

- A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing, and repair galvanizing to comply with ASTM A780.
- B. Touchup Priming: Immediately after erection, clean exposed areas where primer is damaged or missing, and paint with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
  - 1. Clean and prepare surfaces by SSPC-SP 3 power-tool cleaning.
- C. Touchup Painting: Cleaning, touchup priming and touchup painting are specified in Section 099113 "Exterior Painting".

END OF SECTION



SECTION 053100

STEEL DECKING

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. Composite floor deck.

1.3 SUBMITTALS

- A. Product Data: For each type of deck, accessory, and product indicated.
- B. Shop Drawings:
  - 1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.
- C. Welding certificates.
- D. Product Certificates: For each type of steel deck.
- E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:
  - 1. Power-actuated mechanical fasteners.
- F. Evaluation Reports: For steel deck, from ICC\_ES.

1.4 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
- B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.
- C. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

2.2 COMPOSITE FLOOR DECK

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Canam Steel Corporation; Canam Group, Inc.
  - 2. Cordeck.
  - 3. DACS, Inc.
  - 4. Epic Metals Corporation.
  - 5. New Millennium Building Systems, LLC.
  - 6. Nucor Corp.; Vulcraft Group.
- B. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:
  - 1. Galvanized-Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 33, G60 zinc coating.
  - 2. Galvanized and Shop-Primed Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 33, G60 zinc coating; with unpainted top surface and cleaned and pretreated bottom surface primed with manufacturer's standard baked-on, rust-inhibitive primer.
  - 3. Profile Depth: As indicated.
  - 4. Design Uncoated-Steel Thickness: 0.0358 inch.

2.3 ACCESSORIES

- A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
- B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
- C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
- D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

- E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
- F. Metal Closure: Steel sheet, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; minimum 3-inch by 3-inch, or of profile indicated for application.
- G. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.
- H. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.
- I. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0598 inch thick, with factory-punched hole of 3/8-inch minimum diameter. Install weld washers at each weld location if uncoated steel thickness is less than 0.028 inch.
- J. Galvanizing Repair Paint: ASTM A 780, with dry film containing a minimum of 94 percent zinc dust by weight.
- K. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION, GENERAL

- A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.
- B. Install temporary shoring before placing deck panels if required to meet deflection limitations.
- C. Locate deck bundles to prevent overloading of supporting members.
- D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
- E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
- F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
- G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

- H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
- I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions to provide strength equal to that provided by the size and spacing of the spot (puddle) welds specified. Contractor is to submit plan and calculations verifying strength.

### 3.3 FLOOR-DECK INSTALLATION

- 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: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches apart, but not more than 18 inches apart.
  - 3. Weld Washers: Install weld washers at each weld location if uncoated steel thickness is less than 0.028 inch.
- B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 24 inches, and as follows:
  - 1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
  - 2. Fasten with a minimum of 1-1/2-inch- long welds.
- 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; butted for cellular deck.
- D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.
- E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

### 3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Field welds will be subject to inspection.
- C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.
- D. Remove and replace work that does not comply with specified requirements.
- E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.5 PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.
  - 1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.
  - 2. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 054000

COLD-FORMED METAL FRAMING

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 includes the following:

- 1. Floor joist framing.
- 2. Ceiling joist framing.
- 3. Soffit framing.

- B. Related Sections include the following:

- 1. Division 09 Section "Non-Structural Metal Framing" for interior non-load-bearing, metal-stud framing and ceiling-suspension assemblies.

1.3 SUBMITTALS

- A. Product Data: For each type of cold-formed metal framing product and accessory indicated.
- B. Shop Drawings: Show layout, spacings, sizes, thicknesses, and types of cold-formed metal framing; fabrication; and fastening and anchorage details, including mechanical fasteners. Show reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the product testing indicated.
- B. Product Tests: Mill certificates or data from a qualified independent testing agency or in-house testing with calibrated test equipment indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
- C. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- D. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."

- E. Preinstallation Conference: Attend conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."
  - 1. Review clearance and tolerance requirements of other entities having interface with cold-formed metal framing and material delivery and storage on structural floors.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.
- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold-formed metal framing that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Clark Dietrich Building Systems.
  - 2. Consolidated Fabricators Corp.; Building Products Division.
  - 3. Dale/Incor.
  - 4. MarinoWARE.
  - 5. United Metal Products, Inc.

2.2 MATERIALS

- A. Steel Sheet: ASTM A 1003, Structural Grade, Type H, metallic coated, of grade and coating weight as follows for exterior wall framing, interior load-bearing wall framing, floor joists, ceiling joists and soffit framing:
  - 1. Grade: ST33H.
  - 2. Coating: G60.
- B. Steel Sheet for Vertical Deflection and Drift Clips: ASTM A 653, structural steel, zinc coated, of grade and coating as follows:
  - 1. Grade: 50, Class 1.
  - 2. Coating: G90.

2.3 FLOOR JOIST FRAMING

- A. Steel Joists: Manufacturer's standard C-shaped steel joists, of web depths indicated, punched, with stiffened flanges, and as follows:
  - 1. Minimum Base-Metal Thickness: 0.0329 inch.

2. Flange Width: 1-5/8 inches minimum.

B. Steel Joist Track: Manufacturer's standard U-shaped steel joist track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch.
2. Flange Width: 1-1/2 inches minimum.

#### 2.4 CEILING JOIST FRAMING AND SOFFIT FRAMING

A. Steel Ceiling Joist and Soffit Framing: Manufacturer's standard C-shaped steel sections, of web depths indicated, punched, with stiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch.
2. Flange Width: 1-5/8 inches minimum.

B. Steel Joist Track: Manufacturer's standard U-shaped steel joist track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:

1. Minimum Base-Metal Thickness: 0.0329 inch.
2. Flange Width: 1-1/2 inches minimum.

#### 2.5 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of indicated thickness and configuration as follows:

1. Supplementary framing.
2. Bracing, bridging, and solid blocking.
3. Web stiffeners.
4. Anchor clips.
5. End clips.
6. Foundation clips.
7. Gusset plates.
8. Stud kickers, knee braces, and girts.
9. Joist hangers and end closures.
10. Hole reinforcing plates.
11. Backer plates.

#### 2.6 ANCHORS, PLATES, AND FASTENERS

A. Steel Shapes and Plates: ASTM A 36, zinc coated by hot-dip process according to ASTM A 123.

B. Anchor Bolts: ASTM F 1554, Grade 36, 1/2 inch  $\phi$  x 1 foot, 4 inches threaded carbon-steel headless, hooked bolts and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153, Class C.



- C. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES-AC193 and ACI 318 greater than the design load as determined by testing, per ASTM E488 conducted by a qualified testing agency.
- D. Mechanical Fasteners: ASTM C 1513, stainless steel, self-drilling, self-tapping steel drill screws.
  - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.
- E. Power Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials with allowable load capacities calculated according to ICC-ES-AC70, greater than the design load as determined by testing per ASTM E 1190 conducted by a qualified testing agency.

## 2.7 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A 780.
- B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C 1107, with fluid consistency and 30-minute working time.
- C. Shims: Load bearing, high-density multimonomer plastic, nonleaching.
- D. Sill Sealer Gasket: Closed-cell polyethylene foam, 3/16 to 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.
  - 1. Product:
    - a. Dow Weathermate Sill Seal Foam Gasket.
    - b. Owens Corning FoamSealR Gasket.
    - c. Reflectix Inc. Pro Sill Sealer.

## 2.8 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
  - 1. Fabricate framing assemblies using jigs or templates.
  - 2. Cut framing members by sawing or shearing; do not torch cut.
  - 3. Fasten cold-formed metal framing members by screw fastening, pneumatic pin fastening or riveting. Wire tying of framing members is not permitted.
  - 4. Fasten other materials to cold-formed metal framing by bolting, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine supporting substrates 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 PREPARATION

- A. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.
- B. Install sill sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

#### 3.3 INSTALLATION, GENERAL

- A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed metal framing according to AISI's "S200" and to manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
  1. Screw or bolt wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
  1. Cut framing members by sawing or shearing; do not torch cut.
  2. Fasten cold-formed metal framing members by screw fastening or riveting. Wire tying of framing members is not permitted.
    - a. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Install insulation, specified in Division 07 Section "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) 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.

#### 3.4 JOIST INSTALLATION

- A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.
- B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.
  - 1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches.
  - 2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on Shop Drawings.
- C. Space joists not more than 2 inches from abutting walls, and as follows:
  - 1. Joist Spacing: minimum 16 inches, or as indicated.
- D. Frame openings with built-up joist headers consisting of joist and joist track, nesting joists, or another combination of connected joists if indicated.
- E. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement, or as indicated on Shop Drawings.
  - 1. Install web stiffeners to transfer axial loads of walls above.
- F. Install bridging at intervals indicated on Shop Drawings. Fasten bridging at each joist intersection as follows:
  - 1. Bridging: Joist-track solid blocking of width and thickness indicated, secured to joist webs.
- G. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.

- H. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.5 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. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section may or may not include the following, and is not limited to the items listed:
  - 1. Steel framing and supports for countertops.
  - 2. Steel tube reinforcement for low partitions.
  - 3. Steel framing and supports for mechanical and electrical equipment.
  - 4. Steel framing and supports for applications where framing and supports are not specified in other Sections.
  - 5. Slotted channel framing.
  - 6. Miscellaneous steel trim including steel angle corner guards, steel edgings and loading-dock edge angles.
  - 7. Loose bearing and leveling plates for applications where they are not specified in other Sections.
- B. Products furnished, but not installed, under this Section:
  - 1. Loose steel lintels.
  - 2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
  - 3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

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 and steel weld plates and angles for casting into concrete. 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 SUBMITTALS

- A. Product Data: For the following:

1. Shop primers.
2. Shrinkage-resisting grout.
3. Slotted channel framing.

B. Shop Drawings: Show fabrication and installation details for metal fabrications. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
3. Shelf angles.

C. Welding certificates.

D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

#### 1.5 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code - Steel."

B. Welding Qualifications: 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 D1.6, "Structural Welding Code - Stainless Steel."

#### 1.6 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls, floor slabs, decks and other construction contiguous with metal fabrications by field measurements before fabrication.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

#### 2.2 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.

2.3 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36.
- B. Stainless-Steel Sheet, Strip, and Plate: ASTM A 240 or ASTM A 666, Type 304.
- C. Stainless-Steel Bars and Shapes: ASTM A 276, Type 304.
- D. Rolled-Steel Floor Plate: ASTM A 786, rolled from plate complying with ASTM A 36 or ASTM A 283, Grade C or D.
- E. Rolled-Stainless-Steel Floor Plate: ASTM A 793.
- F. Abrasive-Surface Floor Plate: Steel plate with abrasive material metallurgically bonded to steel.
- G. Steel Tubing: ASTM A 500, cold-formed steel tubing.
- H. Steel Pipe: ASTM A 53, standard weight (Schedule 40) unless otherwise indicated.
- I. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
  - 1. Size of Channels: 1-5/8 by 1-5/8 inches or as indicated.
  - 2. Material: Galvanized steel complying with ASTM A 653, commercial steel, Type B structural steel, Grade 33 (Grade 230), with G90 (Z275) coating; 0.079-inch nominal thickness.
    - a. Basis of Design: Subject to compliance with requirements. Provide support system by Hilti Corporation, Strut HS 1-5/8" 14 gauge Pre Galvanized channels and accessories or comparable products by:
      - 1) Unistrut
      - 2) Kindorf.
    - b. Finish: Manufacturers pre-galvanized finish at concealed locations.
    - c. Finish: To be prepared and painted per section 09123 "Interior Painting" at exposed locations and where indicated.
  - 3. Material: Steel complying with ASTM A 1008/A 1008M, structural steel, Grade 33 (Grade 230); 0.0677-inch minimum thickness; coated with rust-inhibitive, baked-on, acrylic enamel.
    - a. Basis of Design: Subject to compliance with requirements. Provide support system by Hilti Corporation, Strut HS 1-5/8" 14 gauge Electro-Deposition Coated channels, fittings and accessories or comparable products by:
      - 1) Unistrut
      - 2) Kindorf.
    - b. Finish: Manufacturers coating meeting Federal Highway Green Tolerance Chart.
      - 1) Color: Green.
    - c. Finish: Galvanized.

- J. Cast Iron: Either gray iron, ASTM A 48/A 48M, or malleable iron, ASTM A 47/A 47M, unless otherwise indicated.

## 2.4 NONFERROUS METALS

- A. Aluminum Plate and Sheet: ASTM B 209, Alloy 6061-T6.
- B. Aluminum Extrusions: ASTM B 221, Alloy 6063-T6.
- C. Aluminum-Alloy Rolled Tread Plate: ASTM B 632, Alloy 6061-T6.
- D. Aluminum Castings: ASTM B 26, Alloy 443.0-F.

## 2.5 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
  - 1. Provide stainless-steel fasteners for fastening aluminum or stainless steel.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, nuts and, where indicated, flat washers; ASTM F 593 (ASTM F 738 M) for bolts and ASTM F 594 (ASTM F 836 M) for nuts, Alloy Group 1 (A1).
  - 1. Threaded Rods and Adhesive Anchoring System (Epoxy Anchors).
    - a. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
      - 1) Hilti Corporation HAS Threaded Rods 304 Stainless Steel and HIT RE 500 Adhesive Epoxy System for use in concrete and solid or grouted masonry.
      - 2) Hilti Corporation HAS Threaded Rods 304 Stainless Steel and HIT HY 20 Adhesive Epoxy System with screen tubes for use in hollow and multi-width masonry.
- D. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.
  - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- E. Eyebolts: ASTM A 489.
- F. Machine Screws: ASME B18.6.3.
- G. Lag Screws: ASME B18.2.1.
- H. Wood Screws: Flat head, ASME B18.6.1.



- I. Plain Washers: Round, ASME B18.22.1.
- J. Lock Washers: Helical, spring type, ASME B18.21.1.
- K. Anchors, General: 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 E 488, conducted by a qualified independent testing agency.
- L. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47 malleable iron or ASTM A 27 cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.
- M. Post-Installed Anchors: Torque-controlled expansion anchors.
  - 1. 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.
  - 2. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.
  - 3. Material for Exterior Locations and Where Stainless Steel is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.
- N. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B 633, Class Fe/Zn 5, as needed for fastening to inserts.

## 2.6 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting", Section 099123 "Interior Painting."
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- E. Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7 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 bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. 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.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.8 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.
  - 1. Fabricate units from slotted channel framing where indicated.
  - 2. Furnish inserts for units installed after concrete is placed.

- C. Galvanize miscellaneous framing and supports where indicated.
- D. Prime miscellaneous framing and supports with primers that comply with Section 099113 "Exterior Painting" or Section 099123 "Interior Painting." where indicated.

2.9 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
  - 1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.
- C. Galvanize and prime exterior miscellaneous steel trim.
- D. Prime interior miscellaneous steel trim with primers that comply with Section 099123 "Interior Painting."

2.10 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 bearing and leveling plates.
- C. Prime plates with primers that comply with Section 099113 "Exterior Painting".

2.11 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 no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.12 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.
- C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.13 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153 for steel and iron hardware and with ASTM A 123 for other steel and iron products.
  - 1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
  - 1. Shop prime with primers specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" or with primers that are compatible with specified topcoats.
- C. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
  - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2. Items Indicated to Receive Primers specified in Section 099123 "Interior Painting" SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 3. Other Items: SSPC-SP 3, "Power Tool Cleaning."
- D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
  - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.14 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. As-Fabricated Finish: AA-M12 (Mechanical Finish: as fabricated, mill finish).
  - 1. Typical finish unless noted otherwise.

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 screws, 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 the following:

1. Cast Aluminum: Heavy coat of bituminous paint.
2. Extruded Aluminum: Two coats of clear lacquer.

### 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.

### 3.3 INSTALLING NOSINGS, TREADS, AND THRESHOLDS

A. Center nosings on tread widths unless otherwise indicated.

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 Section 079200 "Joint Sealants" to provide a watertight installation.

### 3.4 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, nonmetallic grout in both concealed locations where not exposed to moisture; and in exposed locations.
2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.5 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 priming and shop painting (when applicable) 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.
    - a. Apply primer and shop paint (when applicable) specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION

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.

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 and 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 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 SUBMITTALS

- A. Product Data: For metal pan stairs and the following:

- 1. Shop primer products.
- 2. Handrail wall brackets.
- 3. 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.
- C. Delegated-Design Submittal: For stairs, railings and guards, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- D. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the State of Ohio.
- E. Welding certificates.
- F. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

#### 1.5 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."

#### 1.6 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. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design stairs, and railings, including attachment to building construction.
- B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Uniform 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 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.
- C. Structural Performance of Railings: 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.
  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.
- D. Seismic Performance of Stairs: Metal stairs shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
1. Component Importance Factor: See structural drawings.

## 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: ASTM A500/A500M (cold formed) or ASTM A513/A513M.
  1. Provide galvanized finish for exterior installations and where indicated.
- D. Steel Pipe for Railings: 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.
- H. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.
- I. Cast Iron: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

## 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 where built into exterior walls.
  - 1. Select fasteners for type, grade, and class required.
- 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 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, stairs indicated to be galvanized and stairs indicated to be shop primed with zinc-rich primer.
- E. Post-Installed Anchors: Torque-controlled expansion anchors or chemical 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: Stamped steel, unfinished or galvanized to match handrail, from face of wall.
  - 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. Blum, Julius & Co., Inc.
    - b. The Wagner Companies, R&B Wagner, Inc.
- 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. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.
- F. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for interior and exterior use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.

## 2.5 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
  - 1. Join components by welding unless otherwise indicated.
  - 2. Use connections that maintain structural value of joined pieces.
- B. Assemble stairs and railings 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 #2 - Completely sanded joint with some undercutting and pinholes okay.
- 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.

## 2.6 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 of steel rectangular tubes.
    - a. Stringer Size: As required to comply with "Performance Requirements" Article.
    - b. Provide closures for exposed ends of channel and rectangular tube stringers.
    - c. Finish: Shop primed at interior locations unless galvanized is indicated.
      - 1) Provide galvanized finish for exterior installations and where indicated.
      - 2) Shop prime galvanized framing that is to be painted.
  2. Construct platforms of steel channel or rectangular tube headers and miscellaneous framing members as required to comply with "Performance Requirements" Article.
    - a. Provide closures for exposed ends of channel and rectangular tube framing.
    - b. Finish: Shop primed at interior locations unless galvanized is indicated.
      - 1) Provide galvanized finish for exterior installations and where indicated.
      - 2) Shop prime galvanized framing that is to be painted.
  3. Weld stringers to headers; weld framing members to stringers and headers.
  4. Where stairs are enclosed by gypsum board or shaft-wall 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.
  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. At concrete filled treads, shape metal pans to include nosing integral with riser.
  7. 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.

## 2.7 FABRICATION OF STAIR RAILINGS AND GUARDS

- A. Comply with applicable requirements in Section 055213 "Pipe and Tube Railings".
- B. Fabricate railings 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: 1-5/8-inch- diameter top and bottom rails and posts.
  2. Picket Infill: 1/2-inch- square pickets spaced less than 4 inches clear.
- C. Welded Connections: Fabricate railings 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 #2 - Completely sanded joint, some undercutting and pinholes are okay as shown in NAAMM AMP 521.
- D. Form changes in direction of railings as follows:
  1. By bending or by inserting prefabricated elbow fittings.
- 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 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, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.

3. For nongalvanized railings, 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 predrilled hole for exposed bolt anchorage 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.

## 2.8 FINISHES

- A. Finish metal stairs after assembly.
- B. Preparation for Shop Priming: Prepare uncoated, ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
- C. 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 INSTALLING 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."

### 3.3 INSTALLING RAILINGS

- A. Adjust railing 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 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 and rail ends to building construction as follows:
    - a. Anchor posts to steel by welding to steel supporting members.
    - b. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with post-installed anchors and bolts.
- B. 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 required to comply with performance requirements and 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 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.

#### 3.4 REPAIR

- A. 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."
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION



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 pipe and tube railings.

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.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 SUBMITTALS

- A. Product Data: For the following:
  - 1. Manufacturer's product lines of mechanically connected railings.
  - 2. Woven-wire mesh infill panels.
  - 3. Post-installed anchors.
  - 4. Handrail brackets.
  - 5. Grout, anchoring cement, and 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.
- D. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the State of Ohio.

- E. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.5 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
  - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Steel Pipe and Tube Railings:
  - 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. Hollaender Manufacturing Company.
    - b. Wagner, R & B, Inc.
- B. Source Limitations: Obtain each type of railing from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design railings, including attachment to building construction.
- B. 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.

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.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 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 and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.4 STEEL RAILINGS

A. Tubing: ASTM A500 (cold formed) or ASTM A513.

B. 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.

C. Plates, Shapes, and Bars: ASTM A36/A36M.

D. Cast Iron Fittings: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

E. Pickets: 1/2-inch- square steel for guard infill.

2.5 FASTENERS

A. General: Provide the following:

1. Ungalvanized-Steel Railings: Plated steel fasteners complying with ASTM B633 or ASTM F1941, Class Fe/Zn 5 for zinc coating.
2. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329 for zinc coating.

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 indicated and capable of withstanding design loads.

C. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry

and 4 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, 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.

## 2.6 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.
- F. 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.
- G. 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 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. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. 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.
- 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. Provide weep holes where water may accumulate.

- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded 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 surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Form Changes in Direction as Follows:
  - 1. As detailed.
  - 2. By bending or by inserting prefabricated elbow fittings.
- J. 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.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. 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.
- M. 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.
- N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.
- O. For railing posts set in concrete, provide 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.
- P. Picket Infill: 1/2-inch- square pickets spaced less than 4 inches clear.

## 2.8 STEEL AND IRON FINISHES

- A. Galvanized Railings:
  - 1. Hot-dip galvanize exterior steel railings and any other that are indicated, 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.
- D. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, galvanize anchors to be embedded in exterior concrete or masonry.
- E. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
- F. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
1. Shop prime uncoated railings with primers specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting" unless indicated.

### 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. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
  1. 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.
  2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
  3. 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.
- C. 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, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.

- E. 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. 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.
- B. 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.
  - 1. Provide at intervals of not more than 30 feet.

### 3.4 ANCHORING POSTS

- A. Use metal sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. 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, mixed and placed to comply with anchoring material manufacturer's written instructions.
- C. Cover anchorage joint with flange of same metal as post, attached to post with set screws.
- D. Leave anchorage joint exposed with anchoring material flush with adjacent surface.
- E. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as follows:
  - 1. For steel pipe railings, weld flanges to post and bolt to metal supporting surfaces.
- F. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

### 3.5 ATTACHING RAILINGS

- A. Anchor railing ends at walls with round flanges anchored to wall construction and connected to railing ends using nonwelded connections.
- B. Anchor railing ends to metal surfaces with flanges bolted to metal surfaces and connected to railing ends using nonwelded connections.
- C. Attach railings to wall with wall brackets, except where end flanges are used. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- D. Secure wall brackets and railing end flanges 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 wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.
4. For steel-framed partitions, use hanger or lag bolts set into wood backing between studs. Coordinate with stud installation to locate backing members.
5. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.

### 3.6 ADJUSTING AND CLEANING

- A. Clean aluminum by washing thoroughly with clean water and soap and rinsing with clean water.
- 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.

### 3.7 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.

END OF SECTION



SECTION 061053

MISCELLANEOUS 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, but is not limited to the following:
  - 1. Wood blocking and nailers.
  - 2. Plywood blocking.
  - 3. Plywood backing panels.
- B. Related Requirements:
  - 1. Section 011000 "Summary" for the "Responsibility Matrix Attachment" for locations where wood blocking is required for wall mounted items.

1.3 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
  - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
  - 2. NHLA: National Hardwood Lumber Association.
  - 3. NLGA: National Lumber Grades Authority.
  - 4. SPIB: The Southern Pine Inspection Bureau.
  - 5. WCLIB: West Coast Lumber Inspection Bureau.
  - 6. WWPA: Western Wood Products Association.

1.4 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 materials comply 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 materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.

3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

#### 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber 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. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  1. Factory mark each piece of lumber with grade stamp of grading agency.
  2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency when requested by Authority Having Jurisdiction.
  3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
  4. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent.

#### 2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
  1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
  2. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do 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 does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
  - 1. For exposed lumber indicated to receive a stained or natural finish, omit marking and provide certificates of treatment compliance issued by inspection agency when requested by Authority Having Jurisdiction.
- D. Application: Pressure treated wood as indicated on the drawings and in the following locations that are not required to be fire-retardant.
  - 1. Wood placed in direct contact with soil or subject to insect infestation.
  - 2. Wood placed in direct contact with concrete, concrete masonry or any below grade application subject to moisture over time.
  - 3. Wood exposed to exterior weather.

### 2.3 FIRE-RETARDANT-TREATED MATERIALS

- 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 Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, 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 lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. 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 D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
  - 4. Design Value Adjustment Factors: Treated lumber shall be tested according ASTM D 5664, and design value adjustment factors shall be calculated according to ASTM D 6841. For enclosed roof framing, framing in attic spaces, and where high temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.
- C. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. For exposed lumber indicated to receive a stained or natural finish, omit marking and provide certificates of treatment compliance issued by inspection agency.
- E. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.

- F. Application: FRT Wood as indicated on Drawings and the following locations:
1. Schedule – Provide FRT materials as follows:
    - a. Plywood backing panels.
    - b. Framing at locations listed below.
  2. Fire-retardant-treated wood framing may be used in non-combustible Construction Types per the following:
    - a. Combustible materials shall be permitted in buildings of Type I or Type II construction in the following applications and in accordance with the 2017 Ohio Building Code, Section 603.1 Allowable Materials, Items 1.1 through 1.3:
    - b. Fire-retardant-treated wood shall be permitted in:
      - 1) 1.1 Nonbearing partitions where the required fire-resistance rating is 2 hours or less.
      - 2) 1.2 Nonbearing exterior walls where no fire rating is required.
      - 3) 1.3 Roof construction, including girders, trusses, framing and decking.
        - a) Exception: In Buildings of Type IA Construction exceeding two stories in height, fire-retardant-treated wood is not permitted in roof construction when the vertical distance from the upper floor to the roof is less than 20 feet.
  3. Wood blocking is not required to be fire-retardant treated in the three locations listed and described above (nonbearing partitions, nonbearing exterior walls and roof construction that are fire-retardant treated framing) per the 2017 Ohio Building Code, Section 603.1 Allowable Materials, Items 12 and 18:
    - a. 12. Blocking such as for handrails, millwork, cabinets and windows and door frames.
    - b. 18. Nailing or furring strips as permitted by Section 803.1.1.

#### 2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including, but not limited to the following:
1. Blocking.
  2. Nailers.
  3. Rooftop equipment bases and support curbs.
  4. Cants.
  5. Furring.
  6. Grounds.
  7. Utility shelving.
- B. For items of dimension lumber size, provide Construction or No. 2 and maximum moisture content of 19 percent.
- C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
1. Mixed southern pine, No. 2 grade; SPIB.

2. Hem-fir or hem-fir (north), Construction or No. 2 Common grade; NLGA, WCLIB, or WWPA.
  3. Spruce-pine-fir (south) or spruce-pine-fir, Construction or No. 2 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
  4. Eastern softwoods, No. 2 Common grade; NELMA.
  5. Northern species, No. 2 Common grade; NLGA.
  6. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.
- D. 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.
- E. 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.
- F. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

## 2.5 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

## 2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Wood Screws and Lag Screws: ASME B18.2.1, ASME B18.6.1, or ICC-ES AC233.
- E. Screws for Fastening to Metal Framing: ASTM C 954, length as recommended by screw manufacturer for material being fastened.
- F. Carbon Steel Bolts: ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers all hot-dip zinc coated.
- G. Stainless Steel Bolts: ASTM F593, Alloy Group 1 or 2 with ASTM F594, Alloy Group 1 or 2 hex nuts and, where indicated, flat washers.
- H. Post-Installed Anchors: Chemical or torque-controlled expansion anchors of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.

1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
2. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2.

## 2.7 MISCELLANEOUS MATERIALS

- A. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.
- B. Flexible Flashing: Composite, self-adhesive, flashing product consisting of a pliable, 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. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- C. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant treated plywood backing panels with classification marking of testing agency exposed to view.
- 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. Sort and select lumber so that natural characteristics will 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.
- F. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
  1. Use inorganic boron for items that are continuously protected from liquid water.
  2. Use copper naphthenate for items not continuously protected from liquid water.
- G. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  1. NES NER-272 for power-driven fasteners.
  2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

3. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.

### 3.2 WOOD BLOCKING AND NAILER INSTALLATION

- A. Install where indicated and where required for screeding or 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. Locations include, but are not limited to the following applications:
  1. Casework.
  2. Miscellaneous and toilet room accessories.
  3. Infant changing stations.
  4. Wall mounted door stops.
  5. Wall mounted accessories.
  6. Wall mounted fire extinguishers.
  7. Refer to Section 011000 Summary-Responsibility Matrix for other items.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

### 3.3 WOOD FURRING INSTALLATION

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
- B. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal-size furring horizontally and vertically at 24 inches o.c.

### 3.4 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
- B. Protect miscellaneous rough carpentry from weather. If, despite protection, miscellaneous rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

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. Plastic-laminate-clad architectural cabinets.
- 2. Cabinet hardware and accessories.
- 3. Plastic-laminate-clad countertops.
- 4. Solid-surface countertops.
- 5. Closet and utility shelving.
- 6. Wood furring, blocking, shims, and hanging strips for installing interior architectural woodwork items that are not concealed within other construction.

- B. Related Requirements:

- 1. Section 061053 "Miscellaneous 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.

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 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 SUBMITTALS

- A. Product Data: For each type of product and the following:

- 1. Anchors.
- 2. Adhesives.
- 3. Shop finishing materials.

- 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 blocking and reinforcement concealed by construction and specified in other Sections.
4. Show locations and sizes of cutouts and holes for items installed in architectural cabinets.

C. Samples for Verification: For the following:

1. Plastic Laminates: 10 by 10 inches, for each type, color, pattern, and surface finish required.
2. Solid Surface Material:
  - a. Countertop material, 6 inches square.

1.6 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. Handle and store fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions.

1.7 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.

1.8 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 AWI/AWMAC/WI's "Architectural Woodwork Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
  - 1. The Contract Documents contain requirements that are more stringent than the Architectural Woodwork Standards. Comply with Contract Documents and Architectural Woodwork Standards.

2.2 PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS (Plastic Laminate Cabinets)

- A. Architectural Woodwork Standards Grade: Custom.
- B. Design: Frameless cabinet construction with the following door and drawer-front style:
  - 1. Flush overlay.
- C. Pattern or Wood Grain Direction for Plastic Laminate:
  - 1. Doors: Vertical with continuous vertical matching.
  - 2. Drawer Fronts: Vertical with continuous vertical matching.
  - 3. Face Frame Members or Valence: Lengthwise.
  - 4. End Panels: Vertical.
  - 5. Bottoms and Tops of Units: Side to side.
  - 6. Knee Space Panels: Vertical.
  - 7. Aprons: Horizontal.
- D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by quality standard.
  - 1. Horizontal Surfaces: Grade HGS 0.048 inch nominal thickness.
  - 2. Vertical Surfaces: Grade VGP 0.028 inch nominal thickness.
  - 3. Cabinet Liner: Grade CLS 0.020 inch nominal thickness.
  - 4. Backer Laminate: Grade BKL 0.020 inch nominal thickness.
  - 5. Postformed Surfaces: Grade HGP 0.036 inch nominal thickness.
- E. 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 manufacturer's designations on the drawings.
- F. Edgebanding: PVC, 0.12-inch (3mm) thick unless indicated otherwise, matching laminate in color, pattern, and finish.
  - 1. Product: REHAU FlexEdge, or product that complies with requirements by the following manufacturers:
    - a. Doellken.
    - b. Charter Industries.

- G. Exposed Exterior Surfaces: All exterior surfaces exposed to view.
    - 1. Exposed Surfaces Materials: Plastic Laminate, NEMA LD 3, as indicated.
      - a. Horizontal Surfaces: Grade HGS.
      - b. Vertical Surfaces: Grade VGP.
      - c. Door and Drawer Edges: PVC edge banding 0.12 inches (3mm) thick.
  
  - H. Exposed Interior Surface: All interior surfaces exposed to view in open casework or behind transparent doors.
    - 1. Exposed Interior Surface Materials: Plastic Laminate, NEMA LD 3, as indicated.
      - a. Interior faces of cabinet sides or back that have exposed plastic laminate surfaces: Grade VGS.
      - b. Interior face of horizontal surfaces: Grade HGS.
      - c. Cabinet Shelving: Grade HGS unless otherwise indicated.
        - 1) PVC edge banding 0.12 inches (3mm) thick on all four edges.
  
  - I. Semi-Exposed Surfaces: All interior surfaces exposed to view when doors or drawers are open.
    - 1. Semi-Exposed Interior Surface Materials: Thermally Fused Laminate (TFL) Panels. Provide thermally fused laminate panels for the following semiexposed surfaces unless otherwise indicated.
      - a. Interior faces of ends (sides), back, top and bottom.
      - b. Interior faces of cabinet doors and drawer fronts.
      - c. Cabinet Shelving.
        - 1) Edges of Thermally Fused Laminate Panel Shelves: PVC edge banding 0.079 inch (2mm) thick on the front edge.
      - d. Drawer Sides and Backs.
      - e. Drawer Bottoms.
    - 2. Concealed Backs of Panels with Exposed Plastic Laminate or TFL Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.
- 
- J. Plastic-Laminate-Clad Cabinet Construction: As required by referenced quality standard, but not less than the following:
  - 1. Bottoms and Ends of Cabinets, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch particleboard.
  - 2. Shelves: 3/4-inch- thick particleboard.
    - a. Shelves over 36 inches - 3/4-inch- thick plywood or 1-inch- thick particleboard.
  - 3. Backs of Casework: 1/2-inch- thick particleboard or MDF where exposed, dadoed into sides, bottoms, and tops where not exposed.
  - 4. Drawer Fronts: 3/4-inch particleboard subfronts and fronts.
    - a. Fasten exposed fronts to subfront with mounting screws from interior of body.

5. Drawer Sides and Backs: 1/2-inch- thick particleboard or MDF, with glued dovetail or multiple-dowel joints.
    - a. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.
  6. Drawer Bottoms: 1/4-inch- thick particleboard or MDF glued and dadoed into front, back, and sides of drawers.
    - a. Use 1/2-inch material for drawers more than 24 inches wide.
  7. Doors 48 Inches High or Less: 3/4 inch thick, with particleboard or MDF cores.
  8. Doors More Than 48 Inches High: 1-1/8 inches thick, with particleboard cores.
  9. Stiles and Rails of Glazed Doors 48 Inches High or Less: 3/4 inch thick, with particleboard cores.
  10. Stiles and Rails of Glazed Doors More Than 48 Inches High: 1-1/16 inches thick, with solid wood or 1-1/8 inches thick, with particleboard cores.
- K. Filler Strips: Provide where shown or as needed, to close spaces between casework and walls, ceilings, and equipment. Fabricate from same material and with same finish as casework.
1. Provide filler strips at the underside of wall cabinets installed against side walls.

#### 2.4 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.
- B. Butt Hinges: 2-3/4-inch, 5-knuckle steel hinges made from 0.095-inch- thick metal, and as follows:
1. Semi-concealed Hinges for Overlay Doors: BHMA A156.9, B01521.
  2. Manufacturer/Product: Rockford Process Control, No. 376 or product that complies with requirements by the following manufacturer:
    - a. Hafele.
    - b. Amerock.
    - c. Liberty Hardware.
  3. Typical hinge for all architectural cabinets unless noted otherwise.
- C. Wire Pulls: Back mounted, solid metal, 4 inches long, 5/16 inch in diameter.
1. Manufacturer/Product: Rockford Process Control Wire Pull No. P604 or product that complies with requirements by the following manufacturer:
    - a. Doug Mockett and Co., Inc.
    - b. EPCO
    - c. Hafele
- D. Catches: Magnetic catches, BHMA A156.9, B03141.
1. Typical catch for all architectural cabinets, unless noted otherwise. Provide one catch for each door.
- E. Shelf Rests: BHMA A156.9, B04013; two-pin plastic with shelf hold-down clip.

1. Manufacturer/Product: Hafele., Shelf Support, Heavy Duty,
  - a. Double pins, 05 mm each at 32 mm.
  - b. Locks down 3/4" or 1" shelves.
  - c. Color: White.
  
- F. Drawer Slides: BHMA A156.9, B05091.
  1. Unless noted otherwise, drawer slides are Heavy Duty (Grade 1HD-100 and Grade 2HD-200): Side mounted; full extension type; zinc-plated steel ball-bearing slides.
  2. Basis of Design: Subject to compliance with requirements. Provide Knappe and Vogt (KV) products listed or comparable products by the following:
    - a. Accuride.
  3. Box Drawer Slides: For drawers not more than 6 inches high and 24 inches wide.
    - a. KV 8400, 100 lb. capacity (medium duty).
  4. File Drawer Slides: For drawers more than 6 inches high or 24 inches wide.
    - a. KV 8500, 150 lb. capacity.
  5. Lateral file Drawer Slides: For drawers more than 24 inches wide, but not more than 42 inches wide.
    - a. KV 8520, 175 lb. capacity.
  6. Drawers requiring extra heavy-duty slides (trash bin, tool drawer): For drawers marked as "Heavy Duty":
    - a. KV 8800, 200 lb. capacity.
  
- G. Wire Management Tray (WMT):
  1. Manufacturer/Product: Doug Mockett and Company, Inc., WM9/MF.
  2. Dimensions: 3 5/8 inches high by 3 inches wide by 2 feet 0 inches long.
  3. Color: Black.
  
- H. Countertop Support Brackets (CA-X):
  1. Type CA-1: Painted steel brackets with concealed vertical leg; 2 by 2 inches by 1/4-inch-thick and horizontal T shape and 2 by 2 inches by 1/4-inch-thick vertical angle.
    - a. Manufacturer/Product: A & M Hardware 2.0" Concealed Brackets or equal fabricated product.
    - b. Size: Bracket to be countertop depth less 3 inches maximum with vertical dimension of 2 feet.
      - 1) Model: C (2.0) 21 for typical 24 to 25 inch countertops. Verify sizes required.
    - c. Color: White.

2. Type CA-2: Painted steel brackets, surface mounted; 1 1/2 inch flange by 1/8-inch-thick angle profile with tapering legs. For use at masonry walls and where indicated.
  - a. Manufacturer/Product: A & M Hardware Standard Brackets or equal fabricated product.
  - b. Size: Bracket to be countertop depth less 3 inches maximum with vertical dimension.
    - 1) Model: 21x21 for typical 24 to 25-inch countertops. Verify sizes required.
  - c. Color: White 933-58.
- I. Sliding Glass Assembly (SGA): Manufacturer, CR Laurence Co., Inc.
  1. CRL Model 80 EZ-Slide Top Hung Door System CRL3301 (No counter tracks) for 3/8" Glass
    - a. Provide system for each panel of assembly.
    - b. Provide CRL Showcase Stick-On Finger Pulls, No FP86 silver.
    - c. Provide CRL Deluxe Slip-On Lock No. 03P38 for 3/8" glass.
      - 1) 2-3/4" wide by 2-3/16" high unit that slips on and friction fits to the bottom of the glass. No glass preparation is required.
      - 2) Locked position sends plunger into spring-loaded receptacle in the countertop.
- J. Door Locks: BHMA A156.11, E07121.
  1. National Lock No. C-8053.
  2. Provide strikes, rosettes, etc. as required by application for complete installation.
- K. Drawer Locks: BHMA A156.11, E07041.
  1. National Lock No. C-8053.
  2. Provide strikes, rosettes, etc. as required by application for complete installation.
- L. Hanging File Rails: Black plastic rails, snaps onto top of 1/2" drawer sides, full depth of drawers.
  1. Product No. 422.72.381 by Hafele. Provide a pair of hanging file rails at all file drawers and as indicated on drawings.
- M. Grommets for Cable Passage through Countertops: 2-1/2-inch OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
  1. Product: Subject to compliance with requirements, provide "EDP 3" by Doug Mockett & Company, Inc.
    - a. Color selected by Architect from manufacturer's full range. There can be an individual color for each laminate type or solid surface color.
    - b. Provide 2 grommets per countertop, final locations to be determined by Owner.
- N. Clothes Hooks: 13/32-inch diameter hook with 2-inch base and separate cover plate, 1-19/32-inch projection, Satin Stainless Steel.
- O. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
  1. Satin Stainless Steel: BHMA 630.

- P. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.5 PLASTIC-LAMINATE-CLAD COUNTERTOPS (Plastic Laminate Countertops)

- A. Grade: Custom.
- B. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS.
- C. 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 manufacturer's designations on the drawings.
- D. Edge Treatment: 0.12-inch (3mm) PVC edging matching laminate in color, pattern and finish.
- E. Core Material: Particleboard made with exterior glue.
- F. Core Material at Sinks: Particleboard made with exterior glue.
- G. Core Thickness: 3/4 inch.
  - 1. Build up countertop thickness to 1-1/2 inches at front, back, and ends with additional layers of core material laminated to top.
- H. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.
- I. Paper Backing: Provide paper backing on underside of countertop substrate.

2.6 SOLID SURFACE COUNTERTOPS

- A. Solid Surface Material (SS): Homogeneous-filled plastic resin complying with ICPA SS-1.
  - 1. Basis of Design: Subject to compliance with requirements, provide solid surface material as indicated on drawings or comparable products by one of the following:
    - a. Corian by Dupont.
    - b. Wilsonart International
  - 2. Type: Provide Standard type unless Special Purpose type is indicated.
  - 3. Finish: DuPont Corian's standard matte finish, gloss range of 5-20.
  - 4. Colors and Patterns: As indicated by manufacturer's designations on the drawings.
- B. Core Material: Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
- C. Fabricate countertops according to solid surface material manufacturer's written instructions and to the AWI/AWMAC/WI's "Architectural Woodwork Standards."
  - 1. Grade: Custom.
- D. Configuration:

1. Front: Straight, slightly eased at top edge with 1/8-inch radius.
  2. Backsplash: Straight, slightly eased top and side edges with 1/8-inch radius.
  3. End Splash: Matching backsplash.
- E. Countertops: 1/2-inch- thick, solid surface material with front edge built up with same material.
- F. Backsplashes: 1/2-inch- thick, solid surface material.
- G. Fabricate tops with shop-applied edges unless otherwise indicated. Comply with solid surface material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
1. All outside corners require a minimum 2" radius.
  2. All inside corners of L and U shaped installations require a minimum 1/2" radius to reduce corner stress.
    - a. Inside corners less than 90 degrees require a 1" minimum radius.
    - b. Seams in built up front edges must be a minimum of 1" past the inside corner radius.
  3. Fabricate with loose backsplashes for field assembly.
  4. Install integral sink bowls in countertops in the shop.
- H. Joints: Fabricate countertops without joints, in one piece unless otherwise indicated. When required, fabricate countertops in sections for joining in field, with joints at locations indicated.
1. Joint Locations: Not within 18 inches of a sink or cooktop and not where a countertop section less than 36 inches long would result, unless unavoidable.
  2. Splined Joints: Accurately cut kerfs in edges at joints for insertion of metal splines to maintain alignment of surfaces at joints. Make width of cuts slightly more than thickness of splines to provide snug fit. Provide at least three splines in each joint.
- I. 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.
  2. Counter-Mounted Plumbing Fixtures: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
  3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.

## 2.7 CLOSET AND UTILITY SHELVING

- A. Architectural Woodwork Standards Grade: Custom.
- B. Shelf Material: HGS High-Pressure Decorative Laminate (Plastic Laminate Shelving) on both sides of 3/4-inch particle board with exterior glue.
1. 0.012 PVC edge banding
- C. Cleats: Same 3/4-inch panel product as shelving.



- D. Closet Rods: 1-5/16-inch-diameter, chrome-plated-steel tubes with wall mounting flanges, with matching finish, complying with BHMA A156.16, L03131.
  - 1. Product: Knappe & Vogt 750 1 Series Extra Heavy-Duty Round Closet Rod with 734 Wall-Mounted Flange.
- E. Adjustable Shelf Standards and Brackets:
  - 1. Knappe & Vogt No. 87 Super Duty single slot standard with No. 187LL bracket for 12-inch-deep shelves unless noted otherwise, anachrome finish, 12-gauge steel.

## 2.8 MATERIALS

- A. Composite Wood Products: Provide materials that comply with requirements of the Architectural Woodwork Standards for each type of interior architectural woodwork and quality grade specified unless otherwise indicated.
  - 1. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.
  - 2. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.
  - 3. Softwood Plywood: DOC PS 1, medium-density overlay.
  - 4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.
  - 5. Thermally Fused Laminate 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.
- B. High-Pressure Decorative Laminate (Plastic Laminate): NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
  - 1. Basis of Design: Subject to compliance with requirements, provide high-pressure decorative laminates as indicated on drawings or comparable products by one of the following:
    - a. Formica Corporation.
    - b. Nevamar; a Panolam Industries International, Inc. brand.
    - c. Wilsonart LLC.
- C. Glass for Glazed Doors:
  - 1. Clear float glass complying with ASTM C1036, Type I, Class 1, Quality-Q3,
  - 2. Clear tempered glass complying with ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality-Q3; not less than 5.0 mm thick.

## 2.9 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Nailers: Softwood or hardwood lumber kiln-dried to less than 15 percent moisture content.
- B. Provide self-drilling screws for metal-framing supports, as recommended by metal-framing manufacturer.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.
  - 1. Provide metal expansion sleeves or expansion bolts for post-installed anchors.

2. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

D. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.

## 2.10 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. Edges of Rails and Similar Members More Than 3/4-inch-thick: 1/8 inch,

B. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch over base cabinets unless shown otherwise.

C. 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.
  - a. Any exposed area of the casework toe-kick space or side panels, not covered by resilient wall base or other flooring wall base material, must have matching plastic laminate or wood veneer finish applied.
3. Notify Architect seven days in advance of the dates and times interior architectural woodwork fabrication will be complete.
4. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.
  - a. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.
  - b. Verify that parts fit as intended, and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

D. Shop-cut openings in cabinets and countertops 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.

1. Seal edges of cutout openings by saturating with varnish.
2. Owner shall locate grommets in field after casework is fully completed. Provide cutout and install grommets as directed by Owner.
  - a. Provide one grommets per workspace.
  - b. Provide 2 grommets per countertop, not workspace.

E. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual."

1. For glass in wood frames, secure glass with removable stops.
2. For exposed glass edges, polish and grind smooth.

### 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 backpriming of concealed surfaces.

#### 3.2 INSTALLATION GENERAL

- A. Architectural Woodwork Standards 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.
  - 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.

#### 3.3 CABINET INSTALLATION

- A. 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 are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items. Allow for final adjustment after installation.
  - 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 the following:

- a. No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips.
  - b. No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.
5. Provide closure at horizontal gaps at filler panels and any other locations where voids or gaps occur. Use panel materials or wood blocking. Match adjacent exposed material finish.
  6. Adjust operating hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

### 3.4 PLASTIC-LAMINATE-CLAD COUNTERTOP INSTALLATION

- A. Assemble countertops and complete fabrication at Project site to the extent that it was not completed in the shop.
  1. Provide cutouts for appliances, plumbing fixtures, 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.
  2. Seal edges of cutouts by saturating with varnish.
- B. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.
  1. Secure field joints in countertops with concealed clamping devices located within 6 inches of front and back edges and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- C. Scribe and cut countertops to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Countertop Installation: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
  1. Install countertops level and true in line. Use concealed shims as required to maintain not more than a 1/8-inch-in-96-inches variation from a straight, level plane.
  2. Secure backsplashes to walls with adhesive.
  3. Seal joints between countertop and backsplash, if any, and joints where countertop and backsplash abut walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.
    - a. Comply with Section 099200 "Joint Sealants".

### 3.5 SOLID SURFACE COUNTERTOP 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. Fasten subtops to cabinets by screwing through subtops into cornerblocks of base cabinets. Shim as needed to align subtops in a level plane.
- D. 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.
- E. Bond joints with adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
  - 1. Install metal splines in kerfs in countertop edges at joints. Fill kerfs with adhesive before inserting splines and remove excess immediately after adjoining units are drawn into position.
  - 2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- F. 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.
- G. 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. Pre-drill holes for screws as recommended by manufacturer.
- H. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
  - 1. Seal edges of cutouts in particleboard subtops by saturating with varnish.
- I. Apply sealant to gaps at walls; comply with Section 079200 "Joint Sealants."

### 3.6 SHELVING AND CLOSET ROD INSTALLATION

- A. Cut shelf cleats at ends of shelves about 1/2 inch less than width of shelves and sand exposed ends smooth.
  - 1. Install shelf cleats by fastening to framing or backing with finish nails or trim screws, set below face and filled.
  - 2. Space fasteners not more than 16 inches o.c. Use two fasteners at each framing member or fastener location for cleats 4 inches nominal in width and wider.
  - 3. Apply a bead of multipurpose construction adhesive to back of shelf cleats before installing.
  - 4. Remove adhesive that is squeezed out after fastening shelf cleats in place.
- B. Cut shelves to neatly fit openings with only enough gap to allow shelves to be removed and reinstalled.
  - 1. Install shelves, fully seated on cleats, brackets, and supports.
  - 2. Fasten shelves to cleats with finish nails or trim screws, set flush.
  - 3. Fasten shelves to brackets to comply with bracket manufacturer's written instructions.
- C. Install rod flanges for closet rods as indicated.
  - 1. Fasten to shelf cleats, framing members, blocking, or metal backing, or use toggle bolts or hollow wall anchors.

2. Install rods in rod flanges.

D. Install standards for adjustable shelf brackets according to manufacturer's written instructions, spaced not more than 32 inches o.c. and within 6 inches of ends of shelves. Fasten to framing members, blocking, or metal backing, or use toggle bolts or hollow wall anchors.

### 3.7 REPAIR

A. Repair damaged and defective interior architectural woodwork, where possible, to eliminate functional and visual defects and to result in interior architectural woodwork being in compliance with requirements of Architectural Woodwork Standards for the specified grade.

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" for final finishing of installed interior architectural woodwork not indicated to be shop finished.

### 3.8 CLEANING

A. Clean interior architectural woodwork on exposed and semiexposed surfaces.

END OF SECTION

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. Polyisocyanurate foam-plastic board.
- 2. Glass-fiber blanket.

- B. Related Requirements:

- 1. Section 042000 "Unit Masonry" for insulation, specified in this section, installed in masonry cavity wall construction.
- 2. Section 092900 "Gypsum Board" for sound attenuation blanket used as acoustic insulation.

1.3 SUBMITTALS

- A. Product Data: For each type of product.

1.4 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 POLYISOCYANURATE FOAM-PLASTIC BOARD (Continuous Insulation - Polyiso Board)

- A. Polyisocyanurate (Polyiso) Foil Faced Board: ASTM C1289, foil faced, Type I, Class 1, 25 psi.

1. Products: Subject to compliance with requirements, provide one of the products specified.
  - a. Atlas Roofing Corporation; Energy Shield Pro.
  - b. Hunter Panels; Xci Foil (Class A).
  - c. Rmax, Inc.: ECOMAXci FR.

## 2.2 GLASS-FIBER BLANKET (Glass-Fiber Batt Insulation)

- A. Glass-Fiber Blanket, Unfaced: ASTM C665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84; passing ASTM E136 for combustion characteristics.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
    - a. CertainTeed Corporation.
    - b. John Manville; a Berkshire Hathaway company.
    - c. Knauf Insulation.
    - d. Owens Corning.
- B. Glass-Fiber Blanket, Reinforced-Foil Faced: ASTM C665, Type III (reflective faced), Class A (faced surface with a flame-spread index of 25 or less); 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 one of the manufacturers specified.
    - a. CertainTeed Corporation.
    - b. John Manville; a Berkshire Hathaway company.
    - c. Knauf Insulation.
    - d. Owens Corning.

## 2.3 MINERAL-WOOL BLANKETS (Mineral-Wool Batt Insulation)

- A. Mineral-Wool Blanket, Unfaced: ASTM C665, Type I (blankets without membrane facing); consisting of fibers; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E84; passing ASTM E136 for combustion characteristics.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
    - a. Industrial Insulation Group, LLC (IIG-LLC).
    - b. Roxul Inc.
    - c. Thermafiber, Inc.; an Owens Corning company.

## 2.4 SPRAYED APPLIED POLYURETHANE FOAM INSULATION (Spray Foam Insulation)

- A. Products: Subject to compliance with requirements, provide one of the products specified.
  1. Energy Efficient Solutions – Quick Cure Kit.
  2. Tiger Foam Insulation – Slow Rise.



3. CertainTeed – Certa-Spray.

B. Insulation for Miscellaneous Voids and where shown:

1. Two component, closed cell, spray applied expanding polyurethane foam insulation, ASTM C1029.
2. R-Value: R6 minimum per inch.
3. Flame Spread Index: Less than 25 per ASTM E84.
4. Smoke Developed Index: Less than 450 per ASTM E84.
5. Density: 1.75 pounds per cubic foot.

## 2.5 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. Products: Subject to compliance with requirements, provide one of the products specified.
  - a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
  - b. Eckel Industries of Canada; Stic-Klip Type N Fasteners.
  - c. Gemco; Spindle Type.
2. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
3. 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. Products: Subject to compliance with requirements, provide one of the products specified.
  - a. Gemco; 90-Degree Insulation Hangers.
2. Angle: Formed from 0.030-inch- thick, perforated, galvanized carbon-steel sheet with each leg 2 inches square.
3. 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. Products: Subject to compliance with requirements, provide one of the products specified.
  - a. AGM Industries, Inc.; RC150.
  - b. AGM Industries, Inc.; SC150.
  - c. Gemco; Dome-Cap.
  - d. Gemco; R-150.
  - e. Gemco; S-150.
2. 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.

b. Where indicated.

D. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain air space of 1 inch [2 inches] [3 inches] between face of insulation and substrate to which anchor is attached.

1. Provided by Spindle-Type Anchor manufacturer.

E. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates without damaging insulation, fasteners, or substrates.

1. Products: Subject to compliance with requirements, provide one of the products specified.

a. AGM Industries, Inc.; TACTOO Adhesive.

b. Eckel Industries of Canada; Stic-Klip Type S Adhesive.

c. Gemco; Tuff Bond Hanger Adhesive.

## 2.6 ACCESSORIES

A. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

## 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. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

D. 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 SLAB INSULATION

A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.

1. If not otherwise indicated, extend insulation a minimum of 24 inches below exterior grade line.
- B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
  1. If not otherwise indicated, extend insulation a minimum of 48 inches in from exterior walls.

### 3.4 INSTALLATION OF EXTERIOR WALL CONTINUOUS INSULATION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Install continuous insulation behind exterior cladding systems.
- C. Foam-Plastic Board Insulation: Install with closely fitting joints in both directions. Fit courses of insulation between obstructions, with edges butted tightly. Retain units firmly against sheathing substrates by using cladding support system attachment method according to manufacturer's written instructions. Use spindle type impaling pin anchor attachment method in addition to cladding support system where required.

### 3.5 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 interior of construction.
    - 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.
  2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

3.6 INSTALLATION OF VAPOR RETARDERS ON FRAMING

- A. Place vapor retarders on side of construction indicated on Drawings.
- 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.

3.7 INSTALLATION OF SPRAY APPLIED FOAM INSULATION

- A. Spray-Applied Polyurethane Foam Insulation: Apply spray-applied insulation according to manufacturer's written instructions at indicated areas. Apply insulation at penetrations of pipes, ducts and conduits in walls and window and door openings and other areas indicated. After insulation is applied, make flush with face of substrate by using method recommended by insulation manufacturer.

3.8 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. 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

SECTION 072726

FLUID-APPLIED MEMBRANE AIR AND WATER-RESISTIVE 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. This Section includes the following:
  - 1. Fluid-applied membrane air and water resistive barrier assembly.
  - 2. Metal self-adhering sheet membrane.

1.3 DEFINITIONS

- A. Air and Water Resistive Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air and Water Resistive Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air Barrier and Water Resistive Assembly: A functional fluid-applied water-resistant barrier (WRB) applied to the exterior sheathing surfaces, exterior wall sheathing on cold formed metal framing construction of this building project. WRB is to be air impermeable, vapor impermeable, flexible and UV resistant.

1.4 PERFORMANCE REQUIREMENTS

- A. Assembly Performance: Provide a continuous air barrier in the form of an assembly that has an air leakage not to exceed 0.04 cubic feet per minute per square foot under a pressure differential of 1.57 pounds per square foot (0.04 cfm/ft<sup>2</sup> @ 1.57 psf) when tested in accordance with ASTM E2357. The assembly shall accommodate movements of building materials by providing expansion and control joints as required. Expansion / control joints, changes in substrate and perimeter conditions shall have appropriate accessory materials at such locations.
  - 1. The air barrier assembly shall be capable of withstanding combined design wind, fan and stack pressures, both positive and negative on the envelope without damage or displacement and shall transfer the load to the structure.
  - 2. Fluid applied air barriers shall not displace adjacent materials in the air barrier assembly under full load.
  - 3. The air barrier assembly shall be joined in an airtight and flexible manner to the materials of adjacent assemblies, allowing for the relative movement of assemblies due to thermal and moisture variations, creep, and anticipated seismic movement.

- B. Connections to Adjacent Materials: Provide connections to prevent air leakage at the following locations:
  - 1. Foundation and walls, including penetrations, ties and anchors.
  - 2. Walls, windows, curtain walls, storefronts, louvers, doors, and all other fenestration.
  - 3. Different assemblies and fixed openings within those assemblies.
  - 4. Wall and roof connections.
  - 5. Floors over unconditioned space.
  - 6. Walls, floor and roof across construction, control and expansion joints.
  - 7. Walls, floors and roof to utility, pipe and duct penetrations.
  - 8. Seismic and expansion joints.
  - 9. All other potential air leakage pathways in the building envelope.

#### 1.5 SUBMITTALS

- A. Product Data: For each type of product, include manufacturer's written instructions for evaluating, preparing, and treating substrate; temperature and other limitations of installation conditions, technical data; dry film thickness and tested physical and performance properties of air barrier.
- B. Product Certificates: Submit letter from air barrier manufacturer, certifying compatibility of air barrier and accessory materials with Project materials that connect to or that come in contact with the barrier; signed by product manufacturer.

#### 1.6 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm experienced in applying air barrier materials similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- B. Single-Source Responsibility: Obtain primary air barrier materials and air-barrier accessories from a single manufacturer.
- C. Preinstallation Conference: Conduct conference at Project site.
  - 1. Include installers of other construction connecting to air barrier, including roofing, waterproofing, architectural precast concrete, masonry, sealants, windows, glazed curtain walls, and door frames.
  - 2. Review air barrier requirements including surface preparation, substrate condition and pretreatment, minimum substrate curing period, temperature application limitations, forecasted weather conditions, special details and sheet flashings, mockups, installation procedures, sequence of installation, testing and inspecting procedures, and protection and repairs.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original packages with seals unbroken, labeled with material Manufacturer's name, product, date of manufacture, and directions for storage.
  - 1. Remove and replace liquid materials that cannot be applied within their stated shelf life.

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- B. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by material manufacturer. Protect stored materials from direct sunlight and other sources of ultra-violet light.
- C. Handle materials in accordance with material manufacturer's recommendations.

## 1.8 PROJECT CONDITIONS

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

## 1.9 COORDINATION / SEQUENCING

- A. Provide coordination with other Contractors and sequence the construction to ensure continuity of the air barrier system joints, junctures and transitions between materials and assemblies of materials and products, from substructure to walls to roof.

## PART 2 - PRODUCTS

## 2.1 FLUID-APPLIED MEMBRANE AIR AND WATER RESISTIVE BARRIER (FAMAB)

- A. High Build, Vapor-Retarding Membrane Air and Water Resistive Barrier (Synthetic Polymer Type): Provide Manufacturer's complete system, compatible with adjacent components specified in other Sections.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Carlisle Coatings and Waterproofing: Fire Resist Barritech NP-LT.
    - b. Grace Construction Products: Perm-A-Barrier Liquid.
    - c. Henry Company; Air-Bloc 16 MR.
    - d. W. R. Meadows, Inc.: Air – Shield LSR.
  - 2. Physical and Performance Properties:
    - a. Membrane Air Permeance: Not to exceed 0.004 cfm/ sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E 2178.
    - b. Membrane Vapor Permeance: Maximum 0.1 perms; ASTM E 96, Desiccant Method.
    - c. Ultimate Elongation: Minimum 500 percent; ASTM D412, Die C.
    - d. Adhesion to Substrate: 16 lbf/sq. in. when testing according to ASTM D 4541.
    - e. UV Resistance: Can be exposed to sunlight for 60 days according to manufacturer's written instructions.

## 2.2 FAMAB ACCESSORY MATERIALS

- A. General: Accessory materials recommended by air barrier manufacturer to produce a complete air-barrier assembly and compatible with primary air-barrier material.

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- B. Primer: Liquid primer recommended for substrate by manufacturer of air barrier material, and meeting LEED requirements if applicable.
- C. FAMAB Flashing/Transition Strips: Modified bituminous, 30-mil thick (minimum), smooth surfaced, self-adhering; rubberized asphalt sheet laminated to a 4-mil thick polyethylene film with release liner backer, meeting NFPA 285 requirements.
- D. FAMAB Reinforcing Fabric Strips: Air barrier manufacturer's glass-fiber-mesh tape.
- E. FAMAB Liquid Flashing/Detail Sealants: Air barrier manufacturer's recommended product.
- F. FAMAB Joint Filler: Air barrier manufacturer's standard trowel-grade substrate filler.
- G. FAMAB Foam Sealant: One or two component, foamed-in-place, polyurethane foam sealant, 1.5 to 2.0 lb/cu. ft. density; flame spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.
- H. Stainless-Steel Sheet: ASTM A 240A/A240M, Type 304.
  - 1. Flashing: 0.046-inch-thick (18 gauge), and Series 300 stainless-steel fasteners typical.
- I. Sealant: ASTM C 920, single-component, neutral-curing silicone.
  - 1. Provide products recommended and approved by air barrier manufacturer which are compatible with adjacent materials.
- J. Termination Mastic: Air barrier manufacturer's standard cold fluid applied elastomeric liquid; trowel grade.

## 2.3 METAL SELF-ADHERING SHEET MEMBRANE

- A. Metal Self-Adhering Air Barrier Transition Membrane: Type 304 stainless steel, 2 mil thick on butyl adhesive and interlayer with siliconized release layer.
  - 1. Basis of Design: Subject to compliance with requirements, provide York 304 SA Self-Adhering Stainless Steel or one of the following:
    - a. GE Elemax SS Flashing, GE Silicone, Inc.
    - b. Vapro Thru-Wall Flashing SA, VaproShield, Inc.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
  - 1. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
  - 2. Verify that concrete has cured and aged for minimum time period recommended by air barrier manufacturer.



3. Verify that concrete is visibly dry and free of moisture.
4. Verify that masonry joints are flush and completely filled with mortar.
5. Verify that mortar has been removed from anchors.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 SURFACE PREPARATION

- A. Clean, prepare, treat, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions. 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 isolation joints, 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. General: Install materials according to air barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air 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. 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 membrane 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 as indicated.

1. Wall to Foundation Transition: Utilize transition membrane at interface from wall to foundation.
  2. Parapets: Utilize transition membrane and extend over entire exposed surface parapet material, including top, both front and back and underside of cantilevered portion. Intent is to prevent infiltration of moisture into the parapet/wall system during construction.
  3. Dissimilar Materials: Utilize transition membrane per manufacturer's written instructions.
- C. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.
- D. Apply joint sealants or liquid flashing forming part of air barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant or liquid flashing cannot be applied within these temperature ranges.
- E. Glass Mat Gypsum and Plywood Sheathing, install materials per manufacturer's instructions and per the following minimum requirements:
1. Corners: Provide reinforcing fabric strips with liquid flashing or joint filler at all corners.
  2. Joints: Provide reinforcing fabric strips with liquid flashing or joint filler at all joints.
  3. Fasteners: Treat all fasteners with joint filler or liquid flashing material.
- F. Wall Openings: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, doors and stainless steel flashing/supports. 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.
- G. Transitions to Structural Framing: 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. Utilize transition strip for continuity and seal edges with termination mastic.
- H. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air barrier membrane with foam sealant and cap with sealant joint.
- I. Seal exposed edges of transitions strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
1. Provide shingled application of air barrier membrane material over masonry flashing termination bars installed over initial membrane air barrier application.
- J. Repair punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fish mouths and blisters. Patch with transition strips extending 6 inches beyond repaired areas in strip direction.
- 3.4 PRIMARY AIR AND WATER RESISTIVE 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. If required, provide manufacturers recommended additives to achieve lower 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 and Water Resistive 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-Retarding, High-Build Air and Water Resistive Barrier: Total dry film thickness as recommended in writing by manufacturer to comply with performance requirements, but not less than 40 mils applied in one or more equal coats.
    - a. Verify thickness at square foot intervals.
- C. If Owner has engaged a testing agency, do not cover air barrier until it has been tested, and inspected by Owner's testing agency.
- 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. Testing Agency: Owner may engage a qualified testing agency to perform tests and inspections and prepare test reports. When applicable; notify Owner's testing agency in writing of schedule for Work of this Section to allow sufficient time for testing and inspection. Do not cover Work of this Section until testing and inspection is complete.
- B. Inspections: Air barrier materials 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. Continuous structural support of air barrier system has been provided.
  4. Site conditions for application temperature and dryness of substrates have been maintained.
  5. Maximum exposure time of materials to UV deterioration has not been exceeded.
  6. Surfaces have been primed, if applicable.
  7. 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.
  8. Termination mastic has been applied on cut edges.
  9. Strips and transition strips have been firmly adhered to substrate.
  10. Compatible materials have been used.
  11. Transitions at changes in direction and structural support at gaps have been provided.
  12. Connections between assemblies (membrane and sealants) have complied with requirements for cleanliness, preparation and priming of surfaces, structural support, integrity, and continuity of seal.
  13. All penetrations have been sealed.
- C. Tests: Testing to be performed will be determined by Owner's testing agency:

- D. Remove and replace deficient air barrier components and retest as required.

### 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 required by manufacturer. Remove and replace air barrier exposed for more than manufacturer's allowable limit.
  - 2. Protect air barrier from contact with creosote, uncured coal-tar products, TPO, EPDM, flexible PVC membranes, 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 by manufacturer of affected construction.
- C. Remove masking materials after installation.

END OF SECTION

SECTION 075323

EPDM 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. This Section includes the following:
  - 1. Adhered ethylene-propylene-diene-terpolymer, EPDM, membrane roofing system.
- B. Related Sections include the following:
  - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
  - 2. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counterflashings.
  - 3. Division 07 Section "Roof Specialties" for manufactured copings and roof edge fascia supplied by roof system manufacturer.

1.3 ROOF SYSTEM SCHEDULE

- A. Roof System 1 – Metal Deck (Canopies)
  - 1. EPDM Roof Membrane, 60 mil, non-reinforced, black – Fully adhered.
  - 2. Insulation Cover Board, 1/2-inch, 80 psi insulation cover board – Mechanically fastened.

1.4 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definition of terms related to roofing work in this Section.
- B. Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," before multiplication by a safety factor.
- C. Factored Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI's "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," after multiplication by a safety factor.

## 1.5 PERFORMANCE REQUIREMENTS

- A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.
- B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
- C. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- D. FM Approvals' RoofNav Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system for the following:
  - 1. Fire/Windstorm Classification: Class1A-90.
  - 2. Hail-Resistance Rating: MH.

## 1.6 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
  - 1. Base flashings and membrane terminations.
  - 2. Fastening patterns for corners, perimeter and field-of-roof locations for substrate boards at metal deck.
  - 3. Insulation adhesion patterns.
- C. Qualification Data for Installer:
  - 1. Licensed Contractor Letter: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.
  - 2. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified.
- D. Maintenance Data: For roofing system to include in maintenance manuals.
- E. Warranties: Special warranties specified in this Section.
- F. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

## 1.7 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 warranty.

- B. **Manufacturer Qualifications:** A qualified manufacturer that has UL listing for membrane roofing system identical to that used for this Project.
- C. **Source Limitations:** Obtain components for membrane roofing system from same manufacturer as roofing membrane or that are approved by roofing membrane manufacturer.
- D. **Fire-Test-Response Characteristics:** Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency
  - 1. **Exterior Fire-Test Exposure:** Class A; ASTM E 108, for application and roof slopes indicated.
  - 2. **Fire-Resistance Ratings:** ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

#### 1.8 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, 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.

#### 1.9 PROJECT 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.
- B. **Cold Weather Provisions:** Contractor is responsible for coordinating roofing installation with seasonal weather conditions. Contractor is responsible to change required materials such as primers and adhesives to allow roofing installation in low temperatures. Cost for low temperature products are to be covered in the Base Bid.

#### 1.10 WARRANTY

- A. Quotations for the base bid will include a 20-year NDL (no dollar limit) Total System Warranty and a 2-year NDL (no dollar limit) Total System Installation Warranty.
- B. **Roofing System Warranty:** Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials

or workmanship within specified warranty period. Any water leakage during this warranty period will be corrected as to maintain the roofing system in watertight condition.

1. Warranty includes roofing membrane system, base flashings, roofing accessories, roof insulation, fasteners, vapor retarders, substrate board, roof-related metal trims, edges and copings, walkway products and other roof-related manufacturer-branded components of membrane roofing system.
  2. Warranty Period: 20 years from date of Substantial Completion with a 72-mph wind speed limit.
    - a. Wind speed value is nominal design, 3 second gust winds speeds in miles per hour at 33 feet above ground.
- C. Installers Workmanship Warranty: Roofing Installer's standard form, without monetary limitation, in which Installer agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Any water leakage during this warranty period will be corrected as to maintain the roofing system in watertight condition.
1. Warranty includes roofing membrane system, base flashings, roofing accessories, roof insulation, fasteners, vapor retarders, substrate board, roof-related metal trims, edges and copings, walkway products and other roof-related manufacturer-branded components of membrane roofing system.
  2. Warranty Period: 2 years from date of Substantial Completion with a 72-mph wind speed limit.
- D. Pro-rated System Warranties shall not be accepted.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:
1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

### 2.2 EPDM ROOFING MEMBRANE

- A. EPDM Roofing Membrane: ASTM D 4637, Type I, non-reinforced, flexible sheet made from EPDM, and as follows:
1. Manufacturers/Products:
    - a. Carlisle SynTec Incorporated.; Sure-Seal Non-Reinforced EPDM Roofing System.
    - b. Elevate, Holcim Building Envelope (formerly Firestone Building Products); Elevate RubberGard EPDM Adhered Membrane Roofing System.
    - c. Johns Manville; JM EPDM NR 60 Mil.
  2. Thickness: 60 mils, nominal.
  3. Exposed Face Color: Black.
  4. Three-inch-wide factory laminated tape continuous along one edge of membrane panels.



2.3 AUXILIARY MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
  - 1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: 60-mil- thick EPDM, according to application per manufacturer's details.
- C. Bonding Adhesive: Manufacturer's standard bonding adhesive.
- D. Seaming Material:
  - 1. In seam material: Manufacturer's standard synthetic-rubber polymer primer and 6-inch-wide minimum, butyl splice tape with release paper or film.
    - a. Carlisle SynTec Incorporated Pressure-Sensitive SecurTAPE.
    - b. Elevate, Holcim Building Envelope (formerly Firestone Building Products) Quick Seam Tape.
    - c. Johns Manville JM EPDM Seam Tape Plus.
  - 2. Factory Applied Tape Seaming Materials:
    - a. Manufacturers Factory Applied Tape system may be used instead of field applied tape, 6 inch wide minimum.
    - b. To be installed per manufactures instructions to meet warranty requirements.
  - 3. Cover Tape Material: Manufacturer's standard synthetic-rubber polymer primer and 6-inch-wide minimum, cover tape with 12 inch wide overlayment strips and T-Joint cover tape with release paper or film.
    - a. To be installed per manufactures instructions to meet warranty requirements.
- E. Lap Sealant: Manufacturer's standard single-component sealant, color to match roofing membrane.
- F. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- G. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, approximately 1 inch wide by 1/8-inch-thick; with anchors.
- H. Fasteners (at metal deck installation): Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening system components to substrate, and acceptable to membrane 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, in-seam sealants, termination reglets, cover strips, and other accessories.
  - 1. All metal clamping rings and other exposed metals to be stainless steel.

## 2.4 SUBSTRATE BOARD (AT METAL ROOF DECKS)

- A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum board.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Carlisle SynTec Incorporated: DensDeck Prime Roof Board.
    - b. Elevate, Holcim Building Envelope: Elevate DensDeck Prime Roof Board.
    - c. Georgia-Pacific Building Product: Dens Deck Prime with EONIC Technology.
    - d. John Manville: DensDeck Prime Roof Board.
  - 2. Thickness: 5/8-inch, Type X.
  - 3. Surface Finish: Primed.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate panel to roof deck.

## 2.5 ROOF INSULATION

- A. General: Provide preformed roof insulation boards, manufactured or approved by EPDM roof membrane manufacturer, that comply with requirements and referenced standard. Select from manufacturer's standard sizes and of thicknesses indicated.
- B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2, Grade 2 glass-fiber mat facer on both major surfaces.
  - 1. Manufacturers:
    - a. Carlisle SynTec Incorporated, Secure Shield Polyiso.
    - b. Elevate, Holcim Building Envelope (formerly Firestone Building Products), Resista Iso or Isogard CG.
    - c. Johns Manville, ENRGY 3 CGF.
  - 2. Cover Board: ASTM C 1289 Type II, Class 4, Grade 1, 1/2-inch- thick polyisocyanurate, with a minimum compressive strength of 80 psi.
    - a. Carlisle SynTec Incorporated, Secure Shield HD.
    - b. Elevate, Holcim Building Envelope (formerly Firestone Building Products), Isogard HD Cover Board.
    - c. Johns Manville, High-Density ProtectoR HD.

## 2.6 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatible with membrane roofing.
- B. Low-Rise, Urethane Adhesive: Roof system manufacturer's standard spray-applied, low-rise, two-component urethane adhesive formulated for compatibility and use with glass-fiber matt facer insulation.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
1. Verify that roof openings and penetrations are in place and set and braced and that roof drains 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. At steel deck substrates, verify that surface plane flatness and fastening of steel roof deck complies with requirements in Division 05 Section "Steel Decking."
  4. At concrete substrates, verify that minimum concrete drying period recommended by roofing system manufacturer has passed. Do not proceed with vapor retarder installation testing any sooner than twenty (20) days after concrete has been placed. Do not proceed with vapor retarder installation testing within 72 hours of rain or other precipitation.
  5. Verify that concrete substrate is visibly dry and free of moisture. Perform hand pull test with the specified primer and vapor retarder as recommended by roofing manufacturer and according to ASTM C 1583.
    - a. Test Frequency: One test per each 1,000 sq. ft. or portion thereof, of roof deck.
    - b. Submit test reports within 24 hours of performing tests.
  6. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.
  7. 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 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. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

#### 3.3 SUBSTRATE BOARD

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered not less than 24 inches between rows.
1. Tightly butt substrate boards together.
  2. Cut substrate board to fit tight around penetrations and projections, and to fit tight to intersecting sloping roof decks.

3. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to membrane roofing system manufacturers' written instructions.

### 3.4 INSULATION INSTALLATION

- A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
- B. Comply with membrane roofing system manufacturer's written instructions for installing roof insulation.
- C. Installation:
  1. Install base layer and upper layers of insulation with end joints staggered not less than 12 inches in adjacent rows.
    - a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
    - b. Make joints between adjacent insulation boards not more than 1/4 inch in width.
    - c. Fill gaps exceeding 1/4 inch with insulation.
    - d. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
    - e. Adhere base layer of insulation to vapor retarder according to FM Approvals' RoofNav assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification, as follows:
      - 1) Set insulation in ribbons of spray-bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
        - a) Place weighted material, adhesive buckets, canisters or other, at board corners and seams to hold insulation in place until adhesive is set.

### 3.5 ADHERED ROOFING MEMBRANE INSTALLATION

- A. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.
- B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.
- C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- D. Bonding Adhesive: Apply bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
- E. In addition to adhering, mechanically fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.
- F. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
- G. Tape Seam Installation:

1. Field Seam Installation: Clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight installation.
2. Factory-Applied Seam Tape Installation: Clean and prime surface to receive tape. Firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight installation.
3. Cover Tape Installation: Clean and prime surfaces to receive tape and apply cover tape. Firmly roll side and end laps of overlapping roofing membranes according to manufacturer's written instructions to ensure a watertight installation.

H. Repair tears, voids, and lapped seams in roofing that does not meet requirements.

I. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.

J. Adhere protection sheet over roof membrane at locations indicated.

### 3.6 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane 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 bonding adhesive to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.

E. Terminate and seal top of sheet flashings. Mechanically anchor to substrate through termination bars unless shown otherwise.

### 3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner may, at their option and expense, engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.

B. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

D. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Architect.

1. Notify Architect or Owner 48 hours in advance of date and time of inspection.

3.8 PROTECTING AND CLEANING

- A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing 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 membrane roofing system that does not comply with requirements, repair substrates and repair or reinstall membrane 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

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. This Section includes the following manufactured roof specialties:
  - 1. Roof edge specialties.
  - 2. Roof edge drainage systems.
- B. Related Sections include the following:
  - 1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
  - 2. Division 07 Section "Joint Sealants" for field-applied sealants.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Manufacture and install manufactured roof specialties to resist thermally induced movement and exposure to weather without failing, rattling, leaking, and fastener disengagement.
- B. Manufacture and install roof edge flashings that are certified by the manufacturer to meet the following performance design criteria per the current edition of ANSI/SPRI/FM 4435/ ES-1 Wind Design Standard for Edge Systems used with low slope roofing systems.
  - 1. ANSI/SPRI/FM 4435/ES-1 Test Method RE-1 Test for Roof Edge Termination of Single-Ply Roofing Membranes: The fascia system shall be tested to secure the membrane to minimum of 100 lbs/ft in accord with the ANSI/SPRI/FM 4435/ES-1 Test Method RE-1.
  - 2. ANSI/SPRI/FM 4435/ES-1 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI/FM 4435/ES-1 Test Method RE-2.
- C. Thermal Movements: Provide manufactured roof specialties that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- D. Water Infiltration: Provide manufactured roof specialties that do not allow water infiltration to building interior.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Show layouts of manufactured roof specialties, including plans and elevations. Identify factory- vs. field-assembled work. Include the following:
  - 1. Details for fastening, joining, supporting, and anchoring manufactured roof specialties including fasteners, clips, cleats, and attachments to adjoining work.
  - 2. Details for expansion and contraction.
  - 3. Indicate location of expansion joints.
  - 4. Indicate pattern of seams and layout of fasteners, cleats, clips and other attachments.
  - 5. Include details of special conditions.
- C. Samples for Color Selection and Verification of Material Thickness: For each type of manufactured roof specialty indicated provide a minimum 4 inch by 6 inch sample.

#### 1.5 QUALITY ASSURANCE

- A. Product Options: Information on Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. 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. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance.
  - 1. 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.
- B. Source Limitations: Obtain roof specialties approved by manufacturer providing roofing-system warranty specified in Section 075323 "EPDM Roofing".

#### 1.6 COORDINATION

- A. Coordinate installation of manufactured roof specialties with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

#### 1.7 WARRANTY

- A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Section 075323 "EPDM Roofing".
- B. Special Warranty on Painted Finishes: Manufacturer's standard form in which 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 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.



- 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 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  1. Products: The designs for roof edge flashings and roof edge drainage system are based on the manufacturers and products named. Provide the products listed that correspond with the approved roofing system.

### 2.2 EXPOSED METALS

- A. Aluminum Sheet (exposed): ASTM B 209, alloy and temper recommended by manufacturer for type of use and finish indicated, finished as follows:
  1. Surface: Smooth, flat finish.
  2. High-Performance Organic Finish: Two-Coat Fluoropolymer.
- B. Aluminum Sheet (concealed): ASTM B 209, alloy and temper recommended by manufacturer for type of use and structural performance indicated, mill finished.
- C. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by manufacturer for type of use and structural performance indicated, mill finished.
- D. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.
- E. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 coating designation; structural quality.

### 2.3 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, protective coatings, separators, sealants, and other miscellaneous items required by manufacturer for a complete installation.
- B. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to withstand design loads.
- C. Sealing Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealing tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
- D. Elastomeric Sealant: ASTM C 920, 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. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

## 2.4 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 formed- or extruded-aluminum anchor bar with integral drip edge cleat to engage fascia cover. Provide matching mitered and welded corner units.
1. Products: Subject to compliance with requirements, provide products by one of the following:
    - a. Carlisle SynTec, Inc. – SecurEdge 2000 Fascia.
    - b. Elevate, Holcim Building Envelope (formerly Firestone Building Products) - Elevate AnchorGuard SP Fascia.
    - c. Johns Manville, Inc. – Presto-Tite Fascia Single-Ply.
  2. Fascia Cover: Fabricated from the following exposed metal:
    - a. Formed Aluminum: 0.050 inch thick.
  3. Fascia Cover Color: As indicated by manufacturer's designations As selected by Architect from manufacturer's full range.
  4. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.

## 2.5 ROOF EDGE DRAINAGE SYSTEMS

- A. Products: Subject to compliance with requirements, provide products by one of the following:
1. Carlisle SynTec, Inc.
  2. Elevate, Holcim Building Envelope (formerly Firestone Building Products).
  3. John Manville, Inc.
  4. Metal-Era, Inc.
- B. Manufactured Gutters: Manufactured formed gutter in uniform section lengths not exceeding 12 feet, with mitered and welded or soldered corner units, end caps, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front gutter rim. Furnish with flat-stock gutter straps and gutter support brackets and expansion joints and expansion-joint covers fabricated from same metal as gutters.
1. Fabricate gutter from the following exposed metal:
    - a. Aluminum: 0.040 inch thick.
  2. Gutter Type/Profile: Roofing manufactures industrial gutters:
    - a. Carlisle Industrial Gutter Systems No. IG-1C6.
    - b. Firestone Industrial Gutter Systems No. FS-1C6.
    - c. John Manville equal product.
    - d. Metal-Era Seal-Tite Industrial Gutter IG-1-C6.
  3. Gutter Supports – Roofing manufactures Industrial Gutter System supports:
    - a. Gutter Hangers: .125 inch aluminum mill finish.

4. Gutter Accessories: Wire ball downspout strainer.
- C. Manufactured Downspouts: Rectangular closed-face with mitered elbows, manufactured from the following exposed metal. Furnish wall brackets, from same material and finish as downspouts, with anchors.
  1. Formed Aluminum: 0.040 inch thick.
    - a. Manufacturer's snap-lock seams located at rear corner.
    - b. Downspout strap type – Style 1.
    - c. See drawings for downspout sizes.
  2. Product: Roofing manufacturers Industrial Downspout.

## 2.6 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. 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 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 work.
  1. Examine walls, roof edges, and parapets for suitable conditions for manufactured roof specialties.
  2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
  3. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. General: Install manufactured roof specialties according to manufacturer's written instructions. Anchor manufactured roof specialties securely in place and capable of resisting forces specified in performance requirements. Use fasteners, separators, sealants, and other miscellaneous items as required to complete manufactured roof specialty systems.
  - 1. Install manufactured roof specialties with provisions for thermal and structural movement.
  - 2. Torch cutting of manufactured roof specialties is not permitted.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
  - 1. Coat concealed side of uncoated aluminum manufactured roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
  - 2. Underlayment: Where installing exposed-to-view components of manufactured roof specialties directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene underlayment.
  - 3. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.
- C. Install manufactured roof specialties level, plumb, true to line and elevation, and without warping, jogs in alignment, excessive oil-canning, buckling, or tool marks.
- D. Install manufactured roof specialties to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
- E. Expansion Provisions: Provide for thermal expansion of exposed manufactured roof specialties. Space movement joints at a maximum of 12 feet with no unplanned joints within 18 inches of corners or intersections.
- F. Fasteners: Use fasteners of type and size recommended by manufacturer but of sizes that will penetrate substrate not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- G. Seal joints with elastomeric sealant as required by manufacturer of roofing specialties.

### 3.3 ROOF EDGE FLASHING INSTALLATION

- A. Install cleats, cant dams, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings to resist uplift and outward forces according to performance requirements.

### 3.4 ROOF EDGE DRAINAGE SYSTEM INSTALLATION

- A. General: Install gutters and downspouts to produce a complete roof drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof drainage system.
- B. Gutters: Join and seal gutter lengths. Attach gutters to firmly anchored straps spaced not more than 36 inches apart.

1. Install gutter with expansion joints at locations indicated but not exceeding 50 feet apart. Install expansion joint caps.
- C. Downspouts: Join sections with manufacturer's standard 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 downspout to direct water away from building where indicated.

3.5 CLEANING AND PROTECTION

- A. Clean and neutralize flux materials. Clean off excess solder and sealants.
- B. Remove temporary protective coverings and strippable films as manufactured 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 in a clean condition during construction.
- C. Replace manufactured roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION

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. Penetrations in fire-resistance-rated walls.
- 2. 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, and in smoke barriers.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 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. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.

- a. Penetrations at non-rated floors are required to have Engineering Judgement systems if manufacturer does not have system designs/details for specific penetration conditions and locations.

- C. Qualification Data: For Installer.

- D. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

- E. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."
- B. Installation Responsibility: Assign installation of through-penetration firestop systems in Project to a single qualified installer.
- C. Source Limitations: Obtain through-penetration firestop systems, for each kind of penetration and construction condition indicated, through one source from a single manufacturer.

#### 1.6 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.

#### 1.7 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.
- C. Notify Owner's inspecting agency at least seven days in advance of through-penetration firestop system installations; confirm dates and times on days preceding each series of installations.
- D. Do not cover up through-penetration firestop system installations that will become concealed behind other construction until each installation has been examined by Owner's inspecting agency and building inspector, if required by authorities having jurisdiction.

### PART 2 - PRODUCTS

#### 2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
  - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
  - 2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:

- a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
  - 1) UL in its "Fire Resistance Directory."

## 2.2 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. Specified Technologies, Inc.
  2. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.
    - a. See drawings for UL Classified Penetration Firestopping Systems.
- 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 Fire-Resistive-Rated 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.
  2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- D. Penetrations in Nonfire-Resistive-Rated Horizontal Assemblies: Provide System Detail or Engineered Judgement by approved manufacturer's which can include the following:
  1. Packing Material, mineral wool or other approved product.
  2. Manufacturer's approved Smoke and Acoustic Sealant or Firestop Sealant.
  3. CPVC piping, use manufacturer's approved materials.
  4. Preformed Devices, manufacturer's approved products for bundled cables and other penetrating items.
- E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.
- F. Compatibility: Provide through-penetration firestop systems that are compatible with one another; with the substrates forming openings; and with the items, if any, penetrating through-penetration



firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

- G. 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.

## 2.3 FILL MATERIALS

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.
- E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. 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 non-shrinking, homogeneous mortar.
- H. 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.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, non-shrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

## 2.4 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.

- D. Where items penetrate nonfire-resistance-rated floor systems, install System Detail or Engineered Judgement per approved manufacturer's instructions:
1. When indicated fill annular spaces by friction fitting packing material, mineral wool or other approved product.
  2. When indicated seal with manufacturer's approved Smoke and Acoustic Sealant or Firestop Sealant.
  3. If penetrating item is CPVC piping, use manufacturer's approved system for this material.
  4. Manufacturer's approved preformed devices for bundled cables and other penetrants may be used.

### 3.4 IDENTIFICATION

- A. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
  2. Contractor's name, address, and phone number.
  3. Designation of applicable testing and inspecting agency.
  4. Date of installation.
  5. Manufacturer's name.
  6. Installer's name.

### 3.5 FIELD QUALITY CONTROL

- A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections as required by the OBC [and as indicated on Schedule of Special Inspections] according to ASTM E2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Proceed with enclosing penetration firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

### 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.

END OF SECTION

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.

- B. Related Requirements:

- 1. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

- A. Product Data: For each type of product.

- B. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.

- 1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

- a. Exterior Curtain-Wall/Floor Intersections at non-rated floors are required to have Engineering Judgement systems for their specific condition and location.

- C. Qualification Data: For Installer.

- D. Product Test Reports: For each joint firestopping system, for tests performed by a qualified testing agency.

- E. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."
- B. Installation Responsibility: Assign installation of fire-resistive joint systems in Project to a single qualified installer.
- C. Source Limitations: Obtain joint firestopping systems, for each kind of joint and construction condition indicated, through one source from a single manufacturer.

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.
- C. Notify Owner's inspecting agency at least seven days in advance of fire-resistive joint system installations; confirm dates and times on days preceding each series of installations.
- D. Do not cover up fire-resistive joint system installations that will become concealed behind other construction until Owner's inspecting agency and building inspector of authorities having jurisdiction have examined each installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
  - 1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
  - 2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
    - a. Joint firestopping systems shall bear classification marking of a qualified testing agency.
      - 1) UL in its "Fire Resistance Directory."

## 2.2 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.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. 3M Fire Protection Products.
    - b. Hilti, Inc.
    - c. Specified Technologies, Inc.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.
  - 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
  - 2. Refer to Drawings for UL assemblies and details.
- C. Joints at Exterior Curtain-Wall/Floor Intersections:
  - 1. Nonfire-Resistive-Rated Floors:
    - a. Provide joint systems by approved manufacturers.
      - 1) Manufacturer's System, or Engineered Judgement System for project specific conditions, that seals voids at intersection of curtain wall and nonfire-resistant-rated floor system.
      - 2) System to retard the interior spread of fire and hot gases between stories and meet approval of Authority Having Jurisdiction.
- D. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.
- E. Compatibility: Provide fire-resistive joint systems that are compatible with joint substrates, under conditions of service and application, as demonstrated by fire-resistive joint system manufacturer based on testing and field experience.
- F. Accessories: Provide components of fire-resistive joint 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 fire-resistive joint 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 fire-resistive joint 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 fire-resistive joint 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 as required by the OBC [and as indicated on Schedule of Special Inspections] and 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 fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

END OF SECTION



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. Urethane joint sealants.
3. Butyl joint sealants.
4. Latex joint sealants.
5. Mildew-resistant joint sealants.

B. Related Sections:

1. Division 32 Section "Concrete Paving Joint Sealants" for sealing joints in pavements, walkways, and curbing.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Warranties: Sample of special warranties.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.
- C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.5 FIELD CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
  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.

1.6 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which 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 for Exterior Joints: Manufacturer's standard form in which joint-sealant manufacturer agrees to furnish joint sealants to repair or replace those 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 structural settlement or errors attributable to design or construction resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
  2. Disintegration of joint substrates from natural 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. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.

- C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.
- D. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

## 2.2 URETHANE JOINT SEALANTS

- A. Urethane, M, NS, 25, T, NT: Multicomponent, nonsag or pourable, traffic and nontraffic-grade, urethane joint sealant: ASTM C 920, Type M, Grade NS or P, Class 25, for Use T (horizontal traffic locations).
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. BASF Corporation Construction Systems; MasterSeal NP2 or MasterSeal SL2.
    - b. Pecora Corporation; Dynatred or Dynatroll II SG.
    - c. Sika Corporation, Construction Products Division; Sikaflex - 2c NS.
    - d. Tremco Incorporated; Vulkem 116+catalyst or THC-901.
- B. Urethane, M, NS, 50, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade NS, Class 50, Use NT (vertical and horizontal non-traffic locations).
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Pecora Corporation; Dynatrol II.
    - b. Tremco Incorporated; Dymeric 240 FC.

## 2.3 SILICONE JOINT SEALANTS

- A. Silicone, S, NS, 100/50, NT: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Dow; 790 Silicone Building Sealant.
    - b. GE Construction Sealants; SCS2700 SilPruf LM.
    - c. Sika Corporation; Sikasil WS-290.
    - d. Tremco Incorporated; Spectrem 1.

## LATEX JOINT SEALANTS

- B. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. BASF Building Systems; Sonolac.
    - b. Pecora Corporation; AC-20+.
    - c. Sherwin Williams Company; 950A.
    - d. Tremco Incorporated; Tremflex 834.

## 2.4 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. Products: Subject to compliance with requirements, provide one of the following:
    - a. BASF Building Systems; Omniplus.
    - b. Dow Corning Corporation; 786 Mildew Resistant.
    - c. GE Advanced Materials - Silicones; Sanitary SCS1700.
    - d. Tremco Incorporated; Tremsil 200 Sanitary.

## 2.5 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) 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.

## 2.6 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 joint-sealant performance.

- 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 ceramic 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. Porcelain enamel.
    - d. Glazed surfaces of ceramic 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 C 1193 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 C 1193, unless otherwise indicated.
  4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
  5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.
    - a. Use masking tape to protect surfaces adjacent to recessed tooled joints.
- G. Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations.

### 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 and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant JS-1: Urethane, M, NS, 25, T, NT.

1. Joint Locations: Exterior and interior joints in horizontal traffic surfaces
  - a. Isolation and contraction joints in cast-in-place concrete slabs.
  - b. Tile flooring control and expansion joints.
  - c. Joints between different materials listed above.
  - d. Other joints as indicated.
2. Joint-Sealant Color(s): As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant JS-2: Urethane, M, NS, 50, NT.

1. Joint Locations: Exterior joints in vertical surfaces and horizontal nontraffic surfaces
  - a. Construction joints in cast-in-place concrete (vertical).
  - b. Control and expansion joints in unit masonry.
  - c. Joints between different materials listed above.
  - d. Other joints as indicated.
2. Joint-Sealant Color(s): As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant JS-3: Urethane, M, NS, 50, NT.

1. Joint Locations: Interior joints in vertical and horizontal nontraffic surfaces
  - a. Construction joints in cast-in-place concrete(vertical).
  - b. Control and expansion joints in unit masonry.
  - c. Control and expansion joints in wall tile.
  - d. Gaps between bottom of door frames and floor finishes.
  - e. Other joints as indicated.
2. Joint-Sealant Color(s): As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant JS-4: Silicone, S, NS, 100/50, NT.

1. Joint Locations: Exterior joints in vertical surfaces
  - a. Joints between metal wall panels.
  - b. Joints between materials listed above and adjacent materials.
  - c. Perimeter joints between exterior cladding materials and frames of doors, windows, and louvers.
  - d. Other joints as indicated.
2. Joint-Sealant Color(s): As selected by Architect from manufacturer's full range of colors.

E. Joint-Sealant JS-5: Butyl-Rubber Based.

1. Joint Locations: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
  - a. Where noted on the Drawings or called for in other sections.

F. Joint-Sealant JS-6: Acrylic Latex.

1. Joint Locations: Interior joints in vertical surfaces and horizontal nontraffic surfaces
    - a. Control joints on exposed interior surfaces of exterior walls.
    - b. Perimeter joints on exposed interior side of exterior openings.
    - c. Vertical joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
    - d. Perimeter joints between interior wall surfaces and frames of interior doors, windows, and elevator entrances.
    - e. Other joints as indicated.
  2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.
- G. Joint-Sealant JS-7: Mildew Resistant, Silicone, S, NS, 25, acid curing.
1. Joint Sealant Location: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces
    - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
    - b. Plumbing fixture piping where it penetrates walls.
    - c. Countertop backsplashes where they meet countertops and walls.
    - d. Tile control and expansion joints where indicated.
    - e. Other joints as indicated.
  2. Joint-Sealant Color: Clear/Translucent.

END OF SECTION



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. Interior standard steel doors and frames.

- B. Related Requirements:

- 1. Section 087100 "Door Hardware" for door hardware for hollow-metal doors.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or ANSI/SDI A250.8.

- B. Definitions: The following are to aid in the use of this specification. Information is from Hollow Metal Manufacturing Association Tech Note HMMA 810 TN01-03.

- 1. Actual Door Height – The door opening height minus the top clearance and undercut.

- 2. Door Opening Height – The distance measured vertically between the frame head rabbet and top of floor or bottom of frame minus jamb extension.

- 3. Floor – The top of concrete or structural slab.

- 4. Floor Clearance – The distance between the bottom of the door and the top of the material below the door. This can be the concrete slab, any floor covering or a threshold.

- 5. Floor Covering – Any material applied on top of the floor that extends under the door in its closed position or under the door as it swings to its fully opened position.

- 6. Undercut – The distance between the bottom of the door and the bottom of the frame.

- 7. Jamb Extensions – The portion of a jamb or mullion which extends below the level of a floor.

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. Coordinate location of testing agency labels with hardware that will obscure them. Locate labels at top of door and head of frames when continuous hinges are used.

#### 1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

#### 1.6 SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature-rise ratings, and finishes.

- B. Shop Drawings: Include the following:

1. Elevations of each door type.
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 each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.

- C. Product Schedule: For hollow-metal doors and 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.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and 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 doors and 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, Assa Abloy.
2. Curries Company, Assa Abloy.
3. Steelcraft, an Allegion brand.
4. Republic Doors and Frames, an Allegion brand.

## 2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated 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 and temperature-rise limits indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.
  1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.
  2. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
  3. Temperature-Rise Limit: [At vertical exit enclosures and exit passageways], provide doors that have a maximum transmitted temperature end point of not more than 450 deg F (250 deg C) above ambient after 30 minutes of standard fire-test exposure.
- B. Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.
- C. Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.39 deg Btu/F x h x sq. ft. when tested according to ASTM C518 or ASTM C1363.

## 2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B.
  1. Doors:
    - a. Type: As indicated in the Door and Frame Schedule.
    - b. Thickness: 1-3/4 inches.
    - c. Face: Uncoated Steel sheet, minimum thickness of 0.042 inch.
    - d. Edge Construction: Model 1, Full Flush.
    - e. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.
    - f. Core: Kraft-paper honeycomb.
    - g. Fire-Rated Core: Manufacturer's standard laminated mineral board core for fire-rated and temperature-rise-rated doors.
  2. Frames:
    - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch.

- 1) Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, at doors indicated to have metallic-coated steel sheet.
    - a) Provide at frames installed in CMU and concrete walls.
    - b. Sidelite Frames: Fabricated from same thickness material as adjacent door frame.
    - c. Construction: Full profile welded at masonry wall locations.
    - d. Construction: Knocked down for gypsum board partition locations.
  3. Exposed Finish: Prime.
- 2.4 BORROWED LITES
- A. Fabricate of uncoated steel sheet, minimum thickness of 0.042 inch.
  - B. Construction: Knocked down.
  - C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.
  - D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
- 2.5 HOLLOW-METAL PANELS
- A. Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.
- 2.6 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. Postinstalled 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.

2.7 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."

2.8 FABRICATION

- A. Door Astragals: Provide overlapping astragal 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 or as required to comply with published listing of qualified testing agency.
- B. 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. Sidelite 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 welding.
  - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  - 3. 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.
- C. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
  - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
  - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.
  - 3. Coordinate location of testing agency labels, for door and frame fire-resistance assemblies or smoke and draft control assemblies, with hardware that will obscure them.
    - a. Locate labels at top of door and head of frames when continuous hinges are used.
  - 4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.

- D. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
  - 1. Provide stops and moldings flush with face of door, and with beveled stops unless otherwise indicated.
  - 2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
  - 3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
  - 4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
  - 5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

## 2.9 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 ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

## 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 doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

### 3.2 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
  - 1. 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.
    - a. 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.
    - b. Install frames with removable stops located on secure side of opening.
  - 2. Fire-Rated Openings: Install frames according to NFPA 80.
  - 3. Floor Anchors: Secure with postinstalled expansion anchors.

- a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
  4. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
  5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
    - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
    - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
    - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
    - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Examine installed door frames before hanging doors.
1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics.
    - a. Verify location of bottom of door frames in relation to top of floor structure to verify that required door bottom floor clearances can be achieved.
    - b. Verify that top of floor structure is uniform in height, across the door opening and the door swing area, so that required door bottom floor clearances can be achieved.
- D. Hollow-Metal Doors – Non- Fire-Rated Steel Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
  2. Clearances:
    - a. Provide 1/8 inch to 3/16 inch at heads, jambs, and between pairs of doors.
    - b. Door undercuts from bottom of door to the bottom of the frame must be coordinated as follows:
      - 1) Verify various floor finish thicknesses when determining under-cut dimension to achieve specified clearance.
      - 2) Final clearance from bottom of door to floor finishes shall be 1/2 inch, plus or minus 1/4 inch.
      - 3) Where thresholds are indicated or scheduled, Clearance from bottom of door to top of threshold shall be coordinated to insure proper operation of door and seals.
- E. Hollow-Metal Doors - Fire-Rated and Smoke Control Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
1. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
  2. Smoke-Control Doors: Install with clearances according to NFPA 105.
  3. Clearances:
    - a. Provide 1/8 inch plus or minus 1/16 inch at heads, jambs, and between pairs of doors.
    - b. Door undercuts from bottom of door to the bottom of the frame must be coordinated as follows:

- 1) Verify various floor finish thicknesses when determining under-cut dimension to achieve specified clearance.
  - 2) Final clearance from bottom of door to floor finishes shall be 1/2 inch, plus or minus 1/8 inch.
    - a) Final clearance shall not exceed 3/4 inch per NFPA 80.
    - b) Where Floor Clearance exceeds 3/4 inch, doors must be replaced at no cost to the project.
    - c) Where thresholds are indicated or scheduled, Clearance from bottom of door to top of threshold shall be coordinated to insure proper operation of door and seals.
- F. Glazing: Comply with installation requirements in Section 088000 "Glazing" and with hollow-metal manufacturer's written instructions.

### 3.3 REPAIR

- 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.

END OF SECTION



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 opaque finish.
- 2. Factory fitting flush wood doors to frames and factory machining for hardware.

- B. Related Requirements:

- 1. Section 088000 "Glazing" for glass view panels in flush wood doors.

1.3 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. 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 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 electrical raceway and preparation for electrified hardware, access control systems, and security systems.
- 4. Dimensions and locations of blocking for hardware attachment.
- 5. Dimensions and locations of mortises and holes for hardware.
- 6. Clearances and undercuts.

- C. Samples for Verification:

- 1. Finishes applied to actual door face materials, approximately 8 by 10 inches for each material and finish.

- D. Sample Warranty: For special warranty.

1.4 CLOSEOUT SUBMITTALS

- A. Special warranties.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons and wrap bundles of doors in plastic sheeting.
- C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until building is enclosed and weathertight, 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 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 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 NFPA 252.

1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
  2. Temperature-Rise Limit At vertical exit enclosures 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.
- B. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.

### 2.3 FLUSH WOOD DOORS GENERAL

- A. Quality Standard: In addition to requirements specified, comply with AWI/AWMAC/WT's "Architectural Woodwork Standards."
1. When the Contract Documents contain requirements that are more stringent than the referenced quality standard, comply with the Contract Documents in addition to those of the referenced quality standard.
- B. Definitions: The following are to aid in the use of this specification. Information is from Hollow Metal Manufacturing Association Tech Note HMMA 810 TN01-03.
1. Actual Door Height – The door opening height minus the top clearance and undercut.
  2. Door Opening Height – The distance measured vertically between the frame head rabbet and top of floor or bottom of frame minus jamb extension.
  3. Floor – The top of concrete or structural slab.
  4. Floor Clearance – The distance between the bottom of the door and the top of the material below the door. This can be the concrete slab, any floor covering or a threshold.
  5. Floor Covering – Any material applied on top of the floor that extends under the door in its closed position or under the door as it swings to its fully opened position.
  6. Undercut – The distance between the bottom of the door and the bottom of the frame.
  7. Jamb Extensions – The portion of a jamb or mullion which extends below the level of a floor.

### 2.4 SOLID-CORE FIVE-PLY FLUSH WOOD DOORS AND TRANSOM PANELS FOR OPAQUE FINISH

- A. Manufacturer/Products: Subject to compliance with requirements, provide one of the following Five-Ply Flush Wood Doors:
1. Cendura Series, Mohawk by Masonite Architectural.
  2. Aspiro Series, Marshfield – Algoma by Masonite Architectural.
  3. VT Heritage Collection, Architectural Wood Doors by VT Industries.
  4. Architectural Flush Wood Doors by Oshkosh Door Company.
- B. Interior Doors, Solid-Core Five-Ply for Opaque Finish:
1. Architectural Woodwork Standards Quality Grade: Custom.
  2. Faces: Any closed-grain hardwood of mill option.
    - a. Hardboard Faces: ANSI A135.4, Class 1 (tempered) or Class 2 (standard).

3. Exposed Vertical and Top Edges: Any closed-grain hardwood.
  - a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.
  - b. 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.
    - 2) Provide formed-steel edges and astragals with intumescent seals.
      - a) Finish steel edges and astragals with baked enamel with color to be selected by Architect from manufacturer's full range of colors.
      - b) Finish steel edges and astragals to match door hardware (locksets or exit devices).
  - c. 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.
4. Core for Non-Fire-Rated Doors:
  - a. ANSI A208.1, Grade LD-2 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 doors indicated to have kick, mop, or armor plates.
    - 2) Provide doors with 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. WDMA I.S. 10 structural composite lumber.
    - 1) Screw Withdrawal, Door Face: 550 lbf.
    - 2) Screw Withdrawal, Vertical Door Edge: 550 lbf.
5. 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) 5-inch top-rail blocking.
    - 2) 5-inch bottom-rail blocking, in doors indicated to have protection plates.
    - 3) 5-inch (125-mm) midrail blocking, in doors indicated to have exit devices.
6. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

## 2.5 LIGHT FRAMES AND LOUVERS

- A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.
  - 1. Wood Species: Same species as door faces.
  - 2. Profile: Flush rectangular beads.
  - 3. At wood-core doors with 20-minute fire-protection ratings, provide wood beads and metal glazing clips approved for such use.
- B. Wood-Veneered Beads for Light Openings in Fire-Rated Doors: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire-protection rating indicated on Drawings. Include concealed metal glazing clips where required for opening size and fire-protection rating indicated.
- C. Metal Frames for Light Openings in Fire-Rated Doors: Manufacturer's standard frame formed of 0.048-inch- thick, cold-rolled steel sheet; factory primed for paint finish; and approved for use in doors of fire-protection rating indicated on Drawings.

## 2.6 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.
  - 3. Coordinate location of testing agency labels, for doors with fire-resistance assemblies or smoke and draft control assemblies, with hardware that will obscure them.
    - a. Locate labels at top of door when continuous hinges are used.
- 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, 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.
  - 5. Metal Astragals: When scheduled factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

Openings: Factory cut and trim openings through doors.

- 6. Light Openings: Trim openings with moldings of material and profile indicated.
- 7. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

## 2.7 FACTORY PRIMING

- A. Doors for Opaque Finish: Factory prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 099123" Interior Painting."

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.
    - a. Verify location of bottom of door frames in relation to top of floor structure to verify that required door bottom floor clearances can be achieved.
    - b. Verify that top of floor structure is uniform in height, across the door opening and the door swing area, so that required door bottom floor clearances can be achieved.
  - 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. Job-Fitted Doors, Non-Rated:
  - 1. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
  - 2. 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.
  - 3. Machine doors for hardware.
  - 4. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  - 5. Clearances:
    - a. Provide from 1/8 inch to 3/16 inch at heads, jambs, and between pairs of doors.
    - b. Door undercuts from bottom of door to the bottom of the frame must be coordinated as follows:
      - 1) Verify various floor finish thicknesses when determining under-cut dimension to achieve specified floor clearance.
      - 2) Final floor clearance from bottom of door to floor finishes shall be 1/2 inch, plus or minus 1/4 inch.
      - 3) Where thresholds are indicated or scheduled, Clearance from bottom of door to top of threshold shall be coordinated to insure proper operation of door and seals.
  - 6. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
- C. Job-Fitted Doors, Fire-Rated and Smoke and Draft Control:

1. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
    - a. Install fire-rated doors and frames in accordance with NFPA 80.
    - b. Install smoke- and draft-control doors in accordance with NFPA 105.
  2. 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.
  3. Machine doors for hardware.
  4. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
  5. Clearances:
    - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
      - 1) One Third Hour (20 minute) rated doors are permitted 1/8 inch plus or minus 1/16 inch at these locations.
    - b. Door undercuts from bottom of door to the bottom of the frame must be coordinated as follows:
      - 1) Verify various floor finish thicknesses when determining under-cut dimension to achieve specified floor clearance.
      - 2) Final floor clearance from bottom of door to floor finishes shall be 1/2 inch, plus or minus 1/8 inch.
        - a) Final floor clearance shall not exceed 3/4 inch per NFPA 80.
        - b) Where Floor Clearance exceeds 3/4 inch, doors must be replaced at no cost to the project.
        - c) Where thresholds are indicated or scheduled, Clearance from bottom of door to top of threshold shall be coordinated to insure proper operation of door and seals.
  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.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge per requirements listed for job-fitted doors.
- 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 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

SECTION 083113

ACCESS 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 access doors and frames for walls and ceilings, including key drop.
- B. Related Requirements:
  - 1. Section 077200 "Roof Accessories" for roof hatches.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, fire ratings, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Product Schedule: For access doors and frames including:
  - 1. Types, locations, sizes, latching or locking provisions, and other data pertinent to installation.
  - 2. Use same designations indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

- A. Record Documents: For fire-rated doors, list of applicable room name and number in which access door is located.

1.5 QUALITY ASSURANCE

- A. Fire-Rated Door Inspector Qualifications: Inspector for field quality control inspections of fire-rated door assemblies shall meet the qualifications set forth in NFPA 80, section 5.2.3.1 and the following:
  - 1. Door and Hardware Institute Fire and Egress Door Assembly Inspector (FDAI) certification.



PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection and temperature-rise limit ratings indicated, according to NFPA 252 or UL 10B.

2.2 ACCESS DOORS AND FRAMES

- A. Basis of Design Products: Products by Karp Associates, Inc. or comparable products by one of the following:

1. Milcor Inc.
2. Nystrom, Inc.

- B. Flush Access Doors with Exposed Flanges - AD-1:

1. Product: Karp No. DSC-214M.
2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Locations: Masonry and tile wall surfaces.
4. Door Size: 18 x 18 inches unless indicated otherwise.
5. Uncoated Steel Sheet for Door: Nominal 0.075 inch, 14 gage, factory primed.
6. Frame Material: Nominal 0.060 inch, 16 gage, factory primed.
7. Hinges: Pin type, spring loaded.
8. Latch and Lock: Cam latch, screwdriver operated with interior release.

- C. Flush Access Doors with Concealed Flanges - AD-2:

1. Product: Karp No. KDW.
2. Description: Face of door flush with frame; with concealed flange for gypsum board installation and concealed hinge.
3. Locations: Gypsum board wall and ceiling surfaces.
4. Door Size: 18 x 18 inches unless indicated otherwise.
5. Uncoated Steel Sheet for Door: Nominal 0.075 inch, 14 gage, factory primed.
6. Frame Material: Nominal 0.060 inch, 16 gage, factory primed.
7. Hinges: Pin type, spring loaded.
8. Latch and Lock: Cam latch, screwdriver operated with interior release.

2.3 FIRE-RATED ACCESS DOORS AND FRAMES

- A. Fire-Rated, Flush Access Doors with Exposed Flanges – AD-3.

1. Product: Karp: No. KRP-150FR.
2. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with exposed flange, self-closing door, and concealed hinge.
3. Locations: Masonry and tile wall surfaces.
4. Door Size: 18 x 18 inches unless indicated otherwise.
5. Fire-Resistance Rating: Not less than that of adjacent construction.
6. Temperature-Rise Rating: 250 deg F at the end of 30 minutes.
7. Uncoated Steel Sheet for Door: Nominal 0.036 inch 20 gage factory primed.
8. Frame Material: Nominal 0.060 inch, 16 gage, factory primed.

9. Latch and Lock: Self-latching door hardware, sliding bolt type, keyed paddle latch.

B. Fire-Rated, Flush Access Doors with Concealed Flanges –AD-4:

1. Product: Karp: No. KRP-350FR.
2. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with concealed flange for gypsum board installation, self-closing door, and concealed hinge.
3. Locations: Gypsum board wall and ceiling.
4. Door Size: 18 x 18 inches unless indicated otherwise.
5. Fire-Resistance Rating: Not less than that of adjacent construction.
6. Temperature-Rise Rating: 250 deg F at the end of 30 minutes.
7. Uncoated Steel Sheet for Door: Nominal 0.036 inch 20 gage factory primed.
8. Frame Material: Nominal 0.060 inch, 16 gage, factory primed.
9. Latch and Lock: Self-closing, self-latching door hardware, sliding bolt type, keyed paddle latch.

#### 2.4 THROUGH-WALL DROP BOX

A. Basis of Design Product: Custom High Security Through the Wall Deposit Drop Box with Hopper Drop Door by Locking Security Mailbox or comparable products approved by Architect.

B. Description: Wall mounted, 12 gauge steel, through-wall mail/drop box with rainproof cover, galvanized steel adjustable chute, and cold rolled steel box.

C. Size:

1. Collection Box: 23 1/2 inches tall x 10 inches wide x 8 inches deep
2. Mail slot: 10 inches wide x 4 inches tall
3. Chute: Custom for wall depth.

D. Color: Black

E. Interior Access Door:

1. Hinge: Continuous, stainless steel.
2. Latch and Lock: Cam latch, operated by keyed lock.

F. Provide anti-phishing protection interior to collection box.

G. Keys: Two per unit

#### 2.5 MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A879/A879M, with cold-rolled steel sheet substrate complying with ASTM A1008/A1008M, Commercial Steel (CS), exposed.

C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 (Z180) or A60 (ZF180) metallic coating.

- D. Aluminum Extrusions: ASTM B221 (ASTM B221M), Alloy 6063.
- E. Frame Anchors: Same material as door face.
- F. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

## 2.6 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.
  - 1. For concealed flanges with drywall bead, provide edge trim for gypsum panels securely attached to perimeter of frames.
- D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling. Provide access sleeves for each latch operator and install in holes cut through finish.
  - 1. For recessed doors with plaster infill, provide self-furring expanded-metal lath attached to door panel.
- E. Latch and Lock Hardware:
  - 1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
  - 2. Keys: Furnish two keys per lock and key all locks alike.
- F. Aluminum: After fabrication, apply manufacturer's standard protective coating on aluminum that will come in contact with concrete.

## 2.7 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical 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 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 for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION

SECTION 084113

ALUMINUM-FRAMED ENTRANCES AND 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. Section Includes:
  - 1. Exterior storefront framing.
  - 2. Exterior manual-swing entrance doors and door-frame units.
- B. Related Requirements:
  - 1. Section 087100 "Door Hardware" for Entrance Door Hardware.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 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 aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
  - 1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
  - 2. Include full-size isometric details of each type of vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:
    - a. Joinery, including concealed welds.
    - b. Anchorage.
    - c. Expansion provisions.
    - d. Glazing.
    - e. Flashing and drainage.
  - 3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
  - 4. Include point-to-point wiring diagrams showing the following:

- a. Power requirements for each electrically operated door hardware.
    - b. Location and types of switches, signal device, conduit sizes, and number and size of wires.
  - C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
  - D. Entrance Door Hardware Schedule: Prepared by or under supervision of supplier, detailing fabrication and assembly of entrance door hardware, as well as procedures and diagrams. Coordinate final entrance door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of entrance door hardware.
  - E. Delegated-Design Submittal: For aluminum-framed entrances and storefronts indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  - F. Qualification Data: For Installer and the following:
    - 1. For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the state in which Project is located.
  - G. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.
    - 1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.
  - H. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by a qualified testing agency.
  - I. Manufacturer's installation instructions for each system specified.
  - J. Field quality-control reports for Structural-Sealant Adhesion.
  - K. Sample Warranties: For special warranties.
  - L. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.
- 1.5 QUALITY ASSURANCE
- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
  - B. Product Options: 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.
    - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.6 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures, including, but not limited to, excessive deflection.
    - b. Noise or vibration created by wind and thermal and structural movements.
    - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
    - d. Water penetration through fixed glazing and framing areas.
    - e. Failure of operating components.
  - 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of baked enamel, powder coat, or organic finishes within specified warranty period.
  - 1. Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Warranty Period: 10 years from date of Substantial Completion.
- C. Special Finish Warranty, Anodized Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of anodized finishes within specified warranty period.
  - 1. Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, peeling, or chipping.
  - 2. Warranty Period: Five years from date of Substantial Completion

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design aluminum-framed entrances and storefronts.

- B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
  - 1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
  - 2. Failure also includes the following:
    - a. Thermal stresses transferring to building structure.
    - b. Glass breakage.
    - c. Noise or vibration created by wind and thermal and structural movements.
    - d. Loosening or weakening of fasteners, attachments, and other components.
    - e. Failure of operating units.
- C. Structural Loads:
  - 1. Wind Loads: As indicated on Drawings.
  - 2. Other Design Loads: As indicated on Drawings.
- D. Deflection of Framing Members: At design wind pressure, as follows:
  - 1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to 3/4 inch whichever is less.
  - 2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.
- E. Structural: Test according to ASTM E 330/E 330M as follows:
  - 1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
  - 2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
  - 3. Test Durations: As required by design wind velocity, but not less than 10 seconds.
- F. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
  - 1. Fixed Framing and Glass Area:
    - a. Maximum air leakage of 0.06 cfm/sq. ft. at a static-air-pressure differential of 6.24 lbf/sq. ft.
  - 2. Entrance Doors:
    - a. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
- G. Water Penetration under Static Pressure: Test according to ASTM E 331 as follows:



1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 10 lbf/sq. ft.
- H. Seismic Performance: Aluminum-framed entrances and storefronts shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- I. Energy Performance: Certify and label energy performance according to NFRC as follows:
  1. Thermal Transmittance (U-factor): Fixed glazing and framing areas as a system shall have U-factor of not more than 0.36 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
  2. Solar Heat Gain Coefficient (SHGC): Fixed glazing and framing areas as a system shall have SHGC of no greater than those shown in Division 08 'Glazing' as determined according to NFRC 200.
  3. Condensation Resistance: Fixed glazing and framing areas as a system shall have an NFRC-certified condensation resistance rating of no less than 69 for both glass (1" insulated with low-e coating) and framing as determined according to NFRC 500.
- J. Noise Reduction: Test according to ASTM E 90, with ratings determined by ASTM E 1332, as follows.
  1. Outdoor-Indoor Transmission Class: Minimum 26.
- K. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.
  1. Temperature Change: 120 deg F ambient; 180 deg F material surfaces.
  2. Thermal Cycling: 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.
    - a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
    - b. Low Exterior Ambient-Air Temperature: 0 deg F.
    - c. Interior Ambient-Air Temperature: 75 deg F.

## 2.3 STOREFRONT SYSTEMS

- A. Basis-of-Design Product for Exterior Storefront System: Subject to compliance with requirements, provide Trifab 451UT by Kawneer North America; an Arconic company or comparable product by one of the following:
  1. Series 3000 XT; Oldcastle Building Envelope.
  2. YES 45 XT High Performance Storefront; by YKK AP America.
  3. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
    - a. Exterior Framing Construction: Thermally broken, 2 inches by 4-1/2 inch.
    - b. Glazing System: Retained mechanically with gaskets on four sides.
    - c. Glazing Plane: Center.
    - d. Finish: High-performance organic finish Color anodic finish.
    - e. Fabrication Method: Screw spline system.
    - f. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
    - g. Steel Reinforcement: As required by manufacturer.

- B. Extruded Framing Components and Trim: Fabricate from extruded aluminum, profiles as indicated on the drawings. Finish to match entrance and storefront system.
  - 1. Sill Flashing: Exterior storefront system framing to have manufacturers thermally broken sill flashing with vertical leg at interior and which weeps water to the exterior. Provide end dam covers.
  - 2. Jamb and Head Backer Plates: The backside of jamb and head framing abutting adjacent construction, if not integral to the framing, is to have extruded aluminum closing off the framing.
    - a. Exterior storefront system framing to have manufacturers thermal break in backer plates.
      - 1) Continuous plastic profile backer plate, manufacturer's standard thickness, can be used instead of extruded aluminum.
- C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.
- D. Snap in or fastened aluminum caps, or plastic caps to seal off open extrusions at the concealed top and bottom of vertical mullions.

#### 2.4 ENTRANCE DOOR SYSTEMS

- A. Basis-of-Design Product for Exterior Storefront Door System: Subject to compliance with requirements, provide AA 425 Thermal Entrance by Kawneer North America; an Arconic company or comparable product by one of the following:
  - 1. Thermal Clad Entrance Door Model MS375 TC by Oldcastle Building Envelope.
  - 2. Megatherm Entrance Door Model 50XT; by YKK AP America.
  - 3. Door Construction: 2-1/4-inch overall thickness, with minimum 0.125-inch thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated, and fillet welded or that incorporate concealed tie rods.
    - a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
  - 4. Door Design: Wide stile; 4-1/4-inch vertical, 4-1/4-inch top rail and 10-inch bottom rail.
  - 5. Glazing Stops and Gaskets: Square snap-on, extruded-aluminum stops and preformed gaskets.
    - a. Provide nonremovable glazing stops on outside of door.

#### 2.5 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Section 087100 "Door Hardware."
- B. Weather Stripping: Manufacturer's standard replaceable components.
  - 1. Compression Type: Made of ASTM D 2000 molded neoprene or ASTM D 2287 molded PVC.

- 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
- C. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.
- D. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

## 2.6 GLAZING

- A. Glazing: Comply with Section 088000 "Glazing."
- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers, complying with Section 088000 "Glazing."
- C. Glazing Sealants: As recommended by manufacturer and complying with Section 088000 "Glazing."

## 2.7 MATERIALS

- A. Aluminum Sheet and Plate: ASTM B 209.
- B. Aluminum Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221 6063-T6 alloy and temper.
  - 1. Extrusions shall not have less than 0.070 inch wall thickness at any location for the main framing.
- ~~C. Aluminum Extruded Structural Pipe and Tubes: ASTM B 429.~~
- ~~D. Aluminum Structural Profiles: ASTM B 308.~~
- E. Steel Reinforcement:
  - 1. Structural Shapes, Plates, and Bars: ASTM A 36.
  - 2. Cold-Rolled Sheet and Strip: ASTM A 1008.
  - 3. Hot-Rolled Sheet and Strip: ASTM A 1011.
  - 4. Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.

## 2.8 ACCESSORIES

- A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
  - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
  - 2. Reinforce members as required to receive fastener threads.

3. Use exposed fasteners with countersunk Phillips screw heads, fabricated from 300 series stainless steel and finished to match framing system.
- B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
  1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123/A 123M or ASTM A 153/A 153M requirements.
- C. Concealed Flashing: Dead-soft, 0.018-inch-thick stainless steel, complying with ASTM A 240/A 240M, of type recommended by manufacturer.
- D. Storefront Aluminum Sheet Flashing: ASTM B209, fabricate from 0.063-inch aluminum, profiles as indicated on the drawings. Finish to match curtain wall system:
- E. Framing Sealant: Storefront Manufacturer's recommended silicone sealant meeting requirements of ASTM C 920, Type S; Grade NS; Class 50; Uses NT, G, A, and O, AAMA 802.3 Type II, AAMA 803.
- F. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.
- G. Rigid PVC Filler.

## 2.9 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. 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 with ends coped or mitered.
  3. Physical and thermal isolation of glazing from framing members.
  4. Accommodations for thermal and mechanical movements of glazing and framing to 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 greatest extent possible.
  7. The top and bottom of vertical framing extrusions are closed off with aluminum caps where they are open at head and sill locations. Seal or weld to make watertight.
    - a. Closing off these extrusions allows sealant and joint filler to be placed continuously along horizontal and vertical head and sill framing transitions.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Exterior Storefront Framing: Fabricate components for assembly using screw-spline system.
- F. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.

1. At interior and exterior doors, provide compression weather stripping at fixed stops.

G. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
2. At exterior doors, provide weather sweeps applied to door bottoms.

H. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.

I. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.

## 2.10 ALUMINUM FINISHES

A. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

1. Product: Kawneer Permanodic.
  - a. Color: Black.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas, 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 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting, applying sealant or tape to contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.
3. Shims to be non-metallic.

- C. Set continuous sill members and flashing in full sealant bed, as specified in Section 079200 "Joint Sealants," to produce weathertight installation.
- D. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF GLAZING

- A. Install glazing as specified in Section 088000 "Glazing."

3.4 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

- A. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.
  - 1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
  - 2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.5 ERECTION TOLERANCES

- A. Erection Tolerances: Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:
  - 1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
  - 2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
  - 3. Alignment:
    - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
    - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch; wide, limit offset from true alignment to 1/8 inch.
    - c. Where surfaces are separated by reveal or protruding element of 1 inch; wide or more, limit offset from true alignment to 1/4 inch.
  - 4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

END OF SECTION

SECTION 087100  
DOOR HARDWARE

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 includes the following:

- 1. Commercial door hardware for the following:
  - a. Swinging doors.
- 2. Cylinders for doors specified in other Sections.
- 3. Electrified door hardware.

- B. Related Sections include the following:

- 1. Section 081113 "Hollow Metal Doors and Frames" for door silencers provided as part of hollow-metal frames and for astragals provided as part of fire-rated labeled assemblies.
- 2. Section 081416 "Flush Wood Doors" for astragals and integral intumescent seals provided as part of fire-rated labeled assemblies.
- 3. Division 26 Sections for connections to electrical power system and for low-voltage wiring work.

1.3 COORDINATION

- A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices, and access control system.
- C. Existing Openings: Where new hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide for proper operation.

#### 1.4 SUBMITTALS

- A. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Details of electrified door hardware, indicating the following:
  - 1. Wiring Diagrams: Power, signal, and control wiring. Include the following:
    - a. System schematic.
    - b. Point-to-point wiring diagram.
    - c. Riser diagram.
    - d. Elevation of each door.
  - 2. Detail interface between electrified door hardware and fire alarm, access control, security, building control system.
  - 3. Operation Narrative: Describe the operation of doors controlled by electrified door hardware.
- C. Door Hardware Sets: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
  - 2. Content: Include the following information:
    - a. Identification number, location, hand, fire rating, and material of each door and frame.
    - b. Type, style, function, size, quantity, and finish of each door hardware item. Include description and function of each lockset and exit device.
    - c. Complete designations of every item required for each door or opening including name and manufacturer.
    - d. Fastenings and other pertinent information.
    - e. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    - f. Explanation of abbreviations, symbols, and codes contained in schedule.
    - g. Mounting locations for door hardware.
    - h. Door and frame sizes and materials.
    - i. Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.
      - a) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.
    - j. List of related door devices specified in other Sections for each door and frame.
  - 3. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.



4. Keying Schedule: Prepared by or under the supervision of Installer's Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

D. Product Certificates: For electrified door hardware, signed by product manufacturer.

1. Certify that door hardware approved for use on types and sizes of labeled fire doors complies with listed fire door assemblies.

E. Qualification Data: For Installer and Architectural Hardware Consultant.

F. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware schedule.

G. Warranty: Special warranty specified in this Section.

#### 1.5 MAINTENANCE MATERIAL SUBMITTALS

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.

#### 1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by lock manufacturer.

1. Installer's responsibilities include supplying and installing door hardware and providing a qualified Architectural Hardware Consultant available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
2. Installer shall have warehousing facilities in Project's vicinity.
3. Scheduling Responsibility: Preparation of door hardware and keying schedules.

B. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

1. Electrified Door Hardware Consultant Qualifications: A qualified Architectural Hardware Consultant who is experienced in providing consulting services for electrified door hardware installations.

C. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to electrified door hardware including, but not limited to, the following:

1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
2. Review sequence of operation for each type of electrified door hardware.
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 required testing, inspecting, and certifying procedures.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including excessive deflection, cracking, or breakage.
    - b. Faulty operation of operators and door hardware.
    - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
  - 2. Warranty Period: One year from date of Substantial Completion, except as follows:
    - a. Exit Devices: Two years from date of Substantial Completion.
    - b. Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain each type and variety of door hardware from single manufacturer, unless otherwise indicated.
  - 1. Provide electrified door hardware from same manufacturer as mechanical door hardware unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.
- B. Acceptable Manufacturers:
  - a. Best, a dormakaba Company.
  - b. Burns Manufacturing, Inc.
  - c. Detex Corporation.
  - d. Falcon, an Allegion Company.
  - e. Glynn-Johnson, an Allegion Company.
  - f. Hager Companies.
  - g. HPC
  - h. Ives, an Allegion Company.
  - i. LCN, an Allegion Company.
  - j. Lund Equipment
  - k. McKinney Products Company; an ASSA ABLOY Group company.

1. National Guard Products, Inc.
  - m. Pemko Manufacturing Co.
  - n. Reese Enterprises
  - o. Rixson; an ASSA ABLOY Group company
  - p. Sargent; an ASSA ABLOY Group company
  - q. Schlage, an Allegion Company
  - r. Stanley Commercial Hardware; Div. of Stanley Security Solutions.
  - s. Telkee
  - t. Trimco
  - u. Von Duprin, an Allegion Company
  - v. Zero International, an Allegion Company
- C. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 012500.
- D. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.
- E. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

## 2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Where fire-rated doors are indicated, provide door hardware complying with NFPA 80 that is listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
1. Test Pressure: After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches or less above the sill.
- B. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that complies with requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg. of water.
- C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- E. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the DOJ's "2010 ADA Standards for Accessible Design".
1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
  2. Comply with the following maximum opening-force requirements:
    - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.

- b. Sliding or Folding Doors: 5 lbf applied parallel to door at latch.
  - c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
- 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
  - 4. Adjust door closer sweep periods so that, from an open position of 90 degrees, the door will take at least 5 seconds to move to a position of 12 degrees from the latch.
  - 5. Adjust spring hinges so that, from an open position of 70 degrees, the door will take at least 1.5 seconds to move to the closed position.

### 2.3 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.
  - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
  - 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Sets" Article. Products are identified by using door hardware designations, as follows:
  - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Sets" Article.
- C. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. 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. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

### 2.4 HINGES, GENERAL

- A. Quantity: Provide the following, unless otherwise indicated:
  - 1. Two Hinges: For doors with heights up to 60 inches.
  - 2. Three Hinges: For doors with heights 61 to 90 inches.
  - 3. Four Hinges: For doors with heights 91 to 120 inches.
- B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- C. Hinge Weight: Unless otherwise indicated, provide the following:
  - 1. Entrance Doors: Heavy-weight hinges.
  - 2. Doors with Closers: Antifriction-bearing hinges.
  - 3. Interior Doors: Standard-weight hinges.

- D. Hinge Base Metal: Unless otherwise indicated, provide the following:
  - 1. Exterior Hinges: Stainless steel, with stainless-steel pin.
  - 2. Interior Hinges: Steel, with steel pin.
  - 3. Hinges for Fire-Rated Assemblies: Stainless steel, with stainless-steel pin.
  
- E. Hinge Options: Where indicated in door hardware sets or on Drawings:
  - 1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for outswinging exterior doors and outswinging corridor doors with locks.
  - 2. Corners: Square.
  
- F. Electrified Functions for Hinges: Comply with the following:
  - 1. Power Transfer: Concealed PTFE-jacketed wires, secured at each leaf and continuous through hinge knuckle.
  - 2. Monitoring: Concealed electrical monitoring switch.
  - 3. Power Transfer and Monitoring: Concealed PTFE-jacketed wires, secured at each leaf and continuous through hinge knuckle, and with concealed electrical monitoring switch.
  
- G. Fasteners: Comply with the following:
  - 1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
  - 2. Wood Screws: For wood doors and frames.
  - 3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
  - 4. Screws: Phillips flat-head. Finish screw heads to match surface of hinges.

## 2.5 HINGES

- A. Butts and Hinges: BHMA A156.1. Listed under Category A in BHMA's "Certified Product Directory."
- B. Template Hinge Dimensions: BHMA A156.7.
- C. Manufacturers:
  - 1. Scheduled Manufacturer and Product:
    - a. Ives 5BB series

## 2.6 CONTINUOUS HINGES

- A. Standard: BHMA A156.26.
- B. Delete subparagraph below if not required.
- C. Requirements:
  - 1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
  - 2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
  - 3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.

4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
7. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

## 2.7 ELECTRIC POWER TRANSFER

### A. Manufacturers:

1. Scheduled Manufacturer and Product:
  - a. Von Duprin EPT-10

### B. Requirements:

1. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires enough to accommodate electric function of specified hardware.
2. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

## 2.8 FLUSH BOLTS

### A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Ives

### B. Requirements:

1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless-steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

## 2.9 COORDINATORS

### A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Ives

B. Requirements:

1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers, surface vertical rod exit device strikes, or other stop mounted hardware. Factory-prepared coordinators for vertical rod devices as specified.

2.10 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Schlage ND series

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Indicators: Where specified, provide escutcheon with lock status indicator window on top of lockset rose:
  - a. Escutcheon height (including rose) 6.05 inches high by 3.68 inches wide.
  - b. Indicator window measuring a minimum 3.52-inch by .60 inch with 1.92 square-inches of front facing viewing area and 180-degree visibility with a total of .236 square-inches of total viewable area.
  - c. Provide snap-in serviceable window to prevent tampering. Lock must function if indicator is compromised.
  - d. Provide messages color-coded with full text and symbol, as scheduled, for easy visibility.
  - e. Unlocked and Unoccupied message will display on white background, and Locked and Occupied message will display on red background.
3. Cylinders: Refer to "KEYING" article, herein.
4. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
5. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
6. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
8. Provide electrified options as scheduled in the hardware sets.
9. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
  - a. Lever Design: Rhodes.

2.11 CYLINDRICAL LOCKS – GRADE 2

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Schlage ALX series

B. Requirements

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 2, and UL Listed for 3-hour fire doors with a minimum cycle life of 1 million.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide 3/4" latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide a minimum of 5 points of lever engagement between the cassette spindle and lever shank to prevent lever sag.
7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
8. Plug-n-Play – Provide modular lockset allowing lock functions to be created for 7 typical functions by inserting/installing parts into the exterior of a fully assembled chassis
9. Reconfigurable Chassis - Provide modular lockset that allows the function to be reconfigured by removing external components from the chassis
10. Lever Trim: Solid cast levers and wrought roses on both sides.
  - a. Lever Design: Saturn.

2.12 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Falcon 24/25 series

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
6. Provide flush end caps for exit devices.
7. Provide exit devices with manufacturer's approved strikes.
8. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
9. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
10. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
11. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
13. Provide electrified options as scheduled.



14. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

2.13 ELECTRONIC ACCESS CONTROL WIRELESS CYLINDRICAL LOCK

A. Manufacturers:

1. Scheduled Manufacturer and Product:

- a. Schlage NDEB series

B. Requirements:

1. ANSI/BHMA A156.2 Series 4000, Grade 1.
2. Florida Building Code (ASTM E330, E1886, E1996) and Miami Dade (TAS 201, 202, 203) requirements for hurricanes.
3. Certified to UL10C 3-hour rating, ULC-S319, FCC Part15, ADA RoHS, ICC ANSI A117.1
4. Listed, UL 294 - The Standard of Safety for Access Control System Units.
5. Compliant with ANSI/BHMA A156.25 Operation and Security interior operating range of 32 degrees F (0 degrees C) to 120 degrees F(49 degrees C) for interior use only.
6. Compliant with ASTM E330 for door assemblies.
7. Compliant with ICC / ANSI A117.1, NFPA 101, NFPA 80 and IBC Chapter 10 Cylinders: Refer to "KEYING" article, herein.
8. Provide cylindrical locksets exceeding the ANSI/BHMA A156.2 Grade 1 performance standards for strength, security, and durability in the categories below:
  - a. Abusive Locked Lever Torque Test – minimum 3,100 inch-pounds without gaining access
  - b. Offset lever pull – minimum 1,600-foot pounds without gaining access
  - c. Vertical lever impact – minimum 100 impacts without gaining access
  - d. Cycle Test - tested to minimum 16 million cycles with no visible lever sag or use of performance aids such as set screws or spacers.
9. Emergency Override: Provide mechanical key override; cylinders: Refer to "KEYING" article, herein.
10. Levers:
  - a. Vandal Resistance: Exterior (secure side) lever rotates freely while door remains locked, preventing damage to internal locking components from vandalism by excessive force.
  - b. Provide lever trim that operates independently of each other and is field reversible without tools.
  - c. Style: Rhodes.
11. Power Supply: 4 AA batteries
  - a. Provide battery powered wireless electronic products with the ability to communicate battery status and battery voltage level by means of a mobile app at door and remotely by Partner integrated software.
12. Features:
  - a. Ability to communicate unit's communication status.
  - b. Visual LED indicators that indicate activation, operational systems status, system error conditions and low power conditions.

- c. Audible feedback that can be enabled or disabled.
  - d. Suitable for both interior and exterior deployment.
  - e. Employ Wi-Fi communications to permit remote view of audits and alerts, as well as provide automatic daily updates to lock configuration and user access rights.
13. Adaptability:
- a. Open Architecture: Provide locksets manufactured with open architecture characteristics capable of handling new and existing access control software and credential reading technology. Can be supported by cloud-based web and mobile apps without the need for an integrated software partner.
14. Switches:
- a. Door Position Sensor – magnet integrated into strike to eliminate additional door prep
  - b. Interior Cover Tamper Guard
  - c. Battery Status
  - d. Request to Exit
  - e. Interior Push Button
15. Credentials: Provide integral credential reader modules in the following configurations:
- a. NFC, including peer-peer compatible, operable with both Android and IOS mobile devices
  - b. 125 kHz contactless smart cards
  - c. Compatibility: Schlage, XceedID, ISONAS, HID, GE/CASI, AWID
  - d. 13.56 MHz contactless smart cards
    - 1) Secure section (multi-technology and smart card) compatibility: Schlage MIFARE Classic, Schlage MIFARE DESFire EV1/EV3
    - 2) 13.56 MHz Serial number only (multi-technology and smart card) compatibility: DESFire CSN, HID iCLASS CSN, MIFARE CSN, MIFARE DESFire EV1/EV3 CSN
  - e. Multi-technology contactless for applications requiring read capability for both 125 kHz proximity and 13.56 MHz contactless smart cards.
  - f. BLE
16. Records: Subject to the limitations of the attached access control system, the wireless locks possess enough storage capacity to support 5000 users and 2000 audits.
17. Verification time: less than or equal to 1 second for smart cards and proximity cards
18. Coordinate with Division 01 and 281300 Access Control.

2.14 ACCESS CONTROL READER

A. Manufacturers and Products:

- 1. Scheduled Manufacturer and Product:
  - a. Schlage MTB Series

B. Requirements:

1. Provide access control card readers manufactured by a global company who is a recognized leader in the production of access control devices. Card reader manufactured for non-access control applications are not acceptable.
2. Provide multi-technology contactless readers complying with ISO 14443.
3. Provide access control card readers capable of reading the following technologies:
  - a. CSN - DESFire® CSN, HID iCLASS® CSN, Inside Contactless PicoTag® CSN, ST Microelectronics® CSN, Texas Instruments Tag-It®, CSN, Phillips I-Code® CSN
  - b. 125 KHz proximity - Schlage® Proximity, HID® Proximity, GE/CASI® Proximity, AWID® Proximity, LenelProx®
  - c. 13.56 MHz Smart card - Schlage smart cards using MIFARE Classic® EV1/EV3, Schlage smart cards using MIFARE Plus®, Schlage smart cards using MIFARE® DESFire® EV1/EV3, Schlage smart cards using MIFARE® DESFire® EV2/EV3
  - d. 13.56 MHz NFC (mobile), 2.45 GHz Bluetooth (mobile) - Mobile means compatible with Bluetooth and NFC-enabled smartphones.

2.15 ACCESS CONTROL CREDENTIALS

A. Manufacturer:

1. Scheduled Manufacturer:
  - a. Schlage

B. Requirements:

1. Provide access control credentials ISO 14443 compliant and GSC-IS® certified compatible with access control readers that allow authorized entry and hold information specific to the user.
2. Provide credentials that have an ISO MIFARE microprocessor, function at 13.56 MHz, 8kbits of memory, open memory architecture, and a passive design requiring no batteries.
3. Provide credentials made of a composite material for added durability that have a read range of up to 4 inches, support up to a 40-bit format.
4. Provide credentials which, when presented to the access control reader at any angle within a minimum distance of one 1-inch, will result in an accurate reading of the card.

2.16 OFFLINE CONTROLLER

A. Manufacturer and Product:

1. Scheduled Manufacturer and Product:
  - a. Schlage CTE Engage Controller

B. Requirements:

1. Provide an offline single opening controller UL 294 listed and compatible with the Schlage Engage Application. Include a multi-technology reader kit.
2. Provide interfaces for a multi-technology credential reader, powered and dry output relays for strike, alarm, and auxiliary function, and with wireless communication capability.
3. Provide offline controller with the following power options:

4. Power Over Ethernet (POE)
    - a. .5A at 12 VDC for up to 500 feet.
    - b. 1.5A at 24 VDC for up to 500 feet.
  5. 12 VDC in 2A at 12 VDC for up to 500 feet.
  6. 24 VDC in 2A at 24 VDC for up to 500 feet.
  7. Provide offline controller with the following communication standards:
    - a. Bluetooth low energy version 4.2.
    - b. 2.4 GHz Wi-Fi (IEEE 802.11b/g/n).
    - c. WPA2, WPA, WEP, 802.1x (PEAP).
    - d. Transport Layer Security (TLS) version 12.
    - e. Advanced Encryption Standard (AES) 256-bit.
  8. Provide offline controller with the following signal inputs:
    - a. One Schlage MT11-485 or MT15-485 reader.
    - b. Request to Enter (REN).
    - c. Request to Exit (REX).
    - d. Remote Release – hardwired.
    - e. Door Position Switch (DPS).
    - f. Reader tamper (TAMP).
  9. Provide offline controller with the following signal outputs:
    - a. Card Reader 0.3A at 12 VDC for up to 500 feet.
    - b. Locking mechanism: 2A at 30 VDC max.
    - c. Auxiliary: 2A at 30 VDC max.
    - d. Alarm: 2A at 30 VDC max.
  10. Provide offline controller with the following with operating temperatures between -31 F (-35 C) to 151 F (66 C).
  11. Provide offline controller with the following on board database:
    - a. up to 5,000 users
    - b. up to 2,000 audits (FIFO)
    - c. up to 16 Time Zones
    - d. up to 32 Holiday Schedules
    - e. up to 16 Schedules (lock & unlock)
  12. Provide offline controller with the following connectivity options:
    - a. Apple or Droid smart phone – Bluetooth updates to CTE.
    - b. Wi-Fi access point – automatic daily updates (one time per day) if connected to Wi-Fi.
- C. Provide offline controller with "No-Tour" with MT20W enrollment reader and Schlage 1K smart credentials (13.56 MHz).

## 2.17 ACCESS CONTROL PLATFORM

### A. Manufacturers and Products:

1. Scheduled Manufacturer:
  - a. Schlage Engage Commercial

- B. Requirements:
1. Provide a cloud-based platform capable of managing users, credentials, access rights, schedules, and audits.
  2. All locks must be supplied in construction mode.
  3. Provide a platform that supports a mobile application (app). Mobile application must allow for:
    - a. Commissioning and configuring devices
    - b. Immediately updating door files
    - c. Retrieving audit information
    - d. Performing firmware updates
  4. Provide software set up on the owner's workstation and Mobile Device which includes:
    - a. Creation of the Owner's Account
    - b. Creation of the Project Site
    - c. Creation of the Team as directed by the Owner
    - d. Addition of five users
    - e. Set up of MT20W and update firmware
    - f. Create unique credentials and verify proper commissioning of ten locks
  5. Provide, at the owner's request, the following on-site training prior to the expiration of the service agreement:
    - a. Completing the following with ENGAGE software:
      - 1) Modifying the Team
      - 2) Move in/move out procedure including
        - a) Adding and Deleting Users
        - b) Adding and Deleting Doors
      - 3) Adding, assigning and programming credentials for access
      - 4) Replacing or deleting lost credentials.
      - 5) Retrieving and viewing of audit information
      - 6) Assigning temporary access
    - b. Commissioning and verifying proper functioning between locks and credentials.
    - c. Updating firmware on the locks.
  6. Must include a service agreement ending a year after Substantial Completion. This service agreement includes being on-site up to 16 hours for set-up and training, as listed above.

2.18 KEYSWITCHES

- A. Manufacturers and Products:
1. Scheduled Manufacturer and Product:
    - a. Schlage 650 series
- B. Requirements:
1. Provide key switches capable of being configured to momentary or maintained action.

2. Provide key switches that accept a mortise cylinder. Cylinders: Refer to "KEYING" article, herein.

## 2.19 POWER SUPPLIES

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Schlage/Von Duprin PS900 Series

### B. Requirements:

1. Provide power supplies approved by manufacturer of supplied electrified hardware.
2. Provide appropriate quantity of power supplies necessary for proper operation of electrified locking components as recommended by manufacturer of electrified locking components with consideration for each electrified component using power supply, location of power supply, and approved wiring diagrams. Locate power supplies as directed by Architect.
3. Provide regulated and filtered 24 VDC power supply, and UL class 2 listed.
4. Provide power supplies with the following features:
  - a. 12/24 VDC Output, field selectable.
  - b. Class 2 Rated power limited output.
  - c. Universal 120-240 VAC input.
  - d. Low voltage DC, regulated and filtered.
  - e. Polarized connector for distribution boards.
  - f. Fused primary input.
  - g. AC input and DC output monitoring circuit w/LED indicators.
  - h. Cover mounted AC Input indication.
  - i. Tested and certified to meet UL294.
  - j. NEMA 1 enclosure.
  - k. Hinged cover w/lock down screws.
  - l. High voltage protective cover.

## 2.20 CYLINDERS

### A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
  - a. Schlage Everest 29 T

### B. Requirements:

1. Provide cylinders/cores compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset; manufacturer's series as indicated. Refer to "KEYING" article, herein.
2. Provide cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
  - a. Patented Restricted: cylinder with permanent core with patented, restricted keyway.

3. Patent Protection: Cylinders/cores requiring use of restricted, patented keys, patent protected.
4. Nickel silver bottom pins.

2.21 KEYING

A. Scheduled System:

1. New factory registered system:

- a. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:

a. Temporary Construction Cylinder Keying.

- 1) Provide construction cores that permit voiding construction keys without cylinder removal, furnished in accordance with the following requirements.

- a) Split Key or Lost Ball Construction Keying System.
- b) 3 construction control keys, and extractor tools or keys as required to void construction keying.
- c) 12 construction change (day) keys.

- 2) Owner or Owner's Representative will void operation of temporary construction keys.

2. Permanent Keying:

- a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.

- 1) Master Keying system as directed by the Owner.

- b. Forward biting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.

- c. Provide keys with the following features:

- 1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
- 2) Patent Protection: Keys and blanks protected by one or more utility patent(s).

- d. Identification:

- 1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
- 2) Identification stamping provisions must be approved by the Architect and Owner.
- 3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.

- 4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
- 5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.

e. Quantity: Furnish in the following quantities.

- 1) Permanent Control Keys: 3.
- 2) Master Keys: 6.
- 3) Change (Day) Keys: 3 per cylinder/core that is keyed differently
- 4) Key Blanks: Quantity as determined in the keying meeting.

## 2.22 KEY CONTROL SYSTEM

A. Manufacturers:

1. Scheduled Manufacturer:

a. Telkee

B. Requirements:

1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.
  - a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
  - b. Provide hinged-panel type cabinet for wall mounting.

## 2.23 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. Falcon SC70A series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with aluminum cylinder.
3. Closer Body: 1-1/2-inch (38 mm) diameter with 5/8-inch (16 mm) diameter heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.



7. Pressure Relief Valve (PRV) Technology: Not permitted.
8. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.24 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Ives

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.25 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer:
  - a. Ives

B. Requirements:

1. Provide protection plates with a minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes plates 2 inches (51 mm) less width of door on single doors, pairs of doors with a mullion, and doors with edge guards. Size plates 1 inch (25 mm) less width of door on pairs without a mullion or edge guards.
3. At fire rated doors, provide protection plates over 16 inches high with UL label.

2.26 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers:
  - a. Glynn-Johnson
2. Acceptable Manufacturers:
  - a. Rixson

B. Requirements:

1. Provide overhead stop at any door where conditions do not allow for a wall stop or floor stop presents tripping hazard.

2.27 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer:

- a. Ives

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide concave type where lockset has a push button of thumbturn.
2. Where a wall stop cannot be used, provide universal floor stops.
3. Where wall or floor stop cannot be used, provide overhead stop.
4. Provide roller bumper where doors open into each other and overhead stop cannot be used.

2.28 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer:

- a. Zero International

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

2.29 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer:

- a. Ives

B. Requirements:

1. Provide "push-in" type silencers for hollow metal or wood frames.
2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
3. Omit where gasketing is specified.

2.30 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
  - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.
- C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
  - 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
  - 2. Steel Machine or Wood Screws: For the following fire-rated applications:
    - a. Mortise hinges to doors.
    - b. Strike plates to frames.
    - c. Closers to doors and frames.
  - 3. Steel Through Bolts: For the following fire-rated applications unless door blocking is provided:
    - a. Surface hinges to doors.
    - b. Closers to doors and frames.
    - c. Surface-mounted exit devices.
  - 4. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
  - 5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
  - 6. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."

2.31 FINISHES

- A. FINISH: BHMA 626/652 (US26D); except:
  - 1. Hinges at Exterior Doors: BHMA 630 (US32D)
  - 2. Aluminum Geared Continuous Hinges: BHMA 628 (US28)
  - 3. Push Plates, Pulls, and Push Bars: BHMA 630 (US32D)
  - 4. Protection Plates: BHMA 630 (US32D)
  - 5. Overhead Stops and Holders: BHMA 630 (US32D)
  - 6. Door Closers: Powder Coat to Match
  - 7. Wall Stops: BHMA 630 (US32D)
  - 8. Latch Protectors: BHMA 630 (US32D)

9. Weatherstripping: Clear Anodized Aluminum
  10. Thresholds: Mill Finish Aluminum
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Steel Doors and Frames: Comply with DHI A115 Series.
1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.
- B. Wood Doors: Comply with DHI A115-W Series.

#### 3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.
1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
  2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

[Delete below if electrified hardware is not used. Edit accordingly.]

- D. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, [above accessible ceilings] [in equipment room]. Verify location with Architect.
  1. Configuration: Provide one power supply for each door opening.
  2. Configuration: Provide the least number of power supplies required to adequately serve doors with electrified door hardware.
- E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

### 3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
  1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
  2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
  3. Door Closers: Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

### 3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

### 3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.7 DOOR HARDWARE SETS

- A. General: Provide hardware for each door to comply with requirements of the Door and Frame Schedule indicated on drawings. The following hardware set schedule corresponds with hardware set numbers indicated in the Door and Frame Schedule.
- B. See attached.

END OF SECTION

DOOR HARDWARE SCHEDULE

**Hardware Group No. 001**

For use on Door #(s):

EX001            EX002            EX103            EX127            EX128            EX161

Provide each PR door(s) with the following:

QTY	DESCRIPTION	CATALOG NUMBER	FINIS H	MFR
2	EA	EXISTING HARDWARE TO REMAIN -- NO WORK REQUIRED.		EXI

**Hardware Group No. 002**

For use on Door #(s):

002A

Provide each PR door(s) with the following:

QTY	DESCRIPTION	CATALOG NUMBER	FINISH	MFR	
2	EA	CONT. HINGE	224HD	628	IVE
2	EA	PUSH PLATE	8200 4" X 16"	630	IVE
2	EA	PULL PLATE	8303 10" 4" X 16" G	630	IVE
2	EA	DOOR CLOSER	SC71A SS	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 003**

For use on Door #(s):

Not Used

**Hardware Group No. 004**

For use on Door #(s):

002C

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PANIC HARDWARE	CD-25-R-L-DANE	626	FAL
1	EA	MORTISE CYLINDER	20-001 XQ11-948	626	SCH
1	EA	RIM CYLINDER	20-022	626	SCH
1	EA	SURFACE CLOSER	SC71A FA	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 005**

For use on Door #(s):

003

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBP6D RHO BATTERY OPERATED	626	SCE
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.
3. PRESENTING A VALID CREDENTIAL TO THE CARD READER LOCK WILL MOMENTARILY UNLOCK THE LEVER-HANDLE WILL TO ALLOW ACCESS.
4. THE LEVER-HANDLE WILL RETURN TO A LOCKED STATE ONCE THE INTERNAL STRIKE TIME ON THE CARD READER LOCK EXPIRES.
5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF BATTERY POWER.



**Hardware Group No. 006**

For use on Door #(s):

005	006	133	134	151	153
154	155	158	159	160	164
165	173 (Alternate 1)				

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ALX50P SAT	626	SCH
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 007**

For use on Door #(s):

010                      EX007A                      020

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	EU STOREROOM LOCK	ND80P6DEU RHO RX CON 12V/24V DC	626	SCH
2	EA	MORTISE CYLINDER	20-001 114	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	NARROW FRM BACK PLT	SC70A-18 FASTEN UTILIZING BOTTOM HOLES ONLY.	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
2	EA	KEY SWITCH	653-1415 L2 12/24 VDC	630	SCE
1	EA	POWER SUPPLY	PS902 900-4RL 900-BBK 24VDC		VON
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		

NOTES:

1. WIRE THE TWO KEY SWITCHES TO THE ND80EU ELECTRIFIED LOCK IN THE FOLLOWING MANNER:

- A. WIRE THE FIRST WIRE FROM THE ND80EU ELECTRIFIED LOCK TO THE (-) NEGATIVE TERMINAL OF THE POWER SUPPLY.
- B. WIRE THE SECOND WIRE FROM THE ND80EU ELECTRIFIED LOCK TO THE NORMALLY OPEN ON THE MOMENTARY SIDE OF THE FIRST KEY SWITCH.
- C. WIRE THE COMMON ON THE MOMENTARY SIDE OF THE FIRST KEY SWITCH TO THE NORMALLY OPEN ON THE MOMENTARY SIDE OF THE SECOND KEY SWITCH.
- D. WIRE THE COMMON ON THE SECOND KEY SWITCH TO THE (+) TERMINAL OF THE POWER SUPPLY.

2. THE CYLINDER FOR EACH KEY SWITCH MUST BE KEYED TO A SEPARATE, DISTINCT KEY FROM THE REST OF THE BUILDING.

3. EACH CYLINDER FOR THIS APPLICATION WILL REQUIRE A DIFFERENT, PATENT-PROTECTED KEYWAY.

OPERATIONAL DESCRIPTION:

- 1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
- 2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.
- 3. INSERTING A KEY INTO THE CYLINDER FOR EACH KEY SWITCH AND SIMULTANEOUSLY TURNING THEM TO THE 'ON' POSITION WILL MOMENTARILY UNLOCK THE LEVER-HANDLE ON THE ELECTRIFIED LOCKSET, ALLOWING ENTRY INTO THE ROOM.
- 4. THE DOOR WILL RETURN TO A CLOSED AND LOCKED STATE ONCE THE STRIKE TIME ON THE POWER SUPPLY HAS ELAPSED.
- 5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF POWER.

**Hardware Group No. 008**

For use on Door #(s):

EX007B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	EU STOREROOM LOCK	ND80P6DEU RHO RX CON 12V/24V DC	626	SCH
2	EA	MORTISE CYLINDER	20-001 114	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	NARROW FRM BACK PLT	SC70A-18 FASTEN UTILIZING BOTTOM HOLES ONLY.	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
2	EA	KEY SWITCH	653-1415 L2 12/24 VDC	630	SCE
1	EA	POWER SUPPLY	FURNISHED UNDER HARDWARE SET #007.	GRY	SCE
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		

NOTES:

1. WIRE THE TWO KEY SWITCHES TO THE ND80EU ELECTRIFIED LOCK IN THE FOLLOWING MANNER:

A. WIRE THE FIRST WIRE FROM THE ND80EU ELECTRIFIED LOCK TO THE (-) NEGATIVE TERMINAL OF THE POWER SUPPLY.

B. WIRE THE SECOND WIRE FROM THE ND80EU ELECTRIFIED LOCK TO THE NORMALLY OPEN ON THE MOMENTARY SIDE OF THE FIRST KEY SWITCH.

C. WIRE THE COMMON ON THE MOMENTARY SIDE OF THE FIRST KEY SWITCH TO THE NORMALLY OPEN ON THE MOMENTARY SIDE OF THE SECOND KEY SWITCH.

D. WIRE THE COMMON ON THE SECOND KEY SWITCH TO THE (+) TERMINAL OF THE POWER SUPPLY.

2. THE CYLINDER FOR EACH KEY SWITCH MUST BE KEYED TO A SEPARATE, DISTINCT KEY FROM THE REST OF THE BUILDING.

3. EACH CYLINDER FOR THIS APPLICATION WILL REQUIRE A DIFFERENT, PATENT-PROTECTED KEYWAY.

OPERATIONAL DESCRIPTION:

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.

2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.

3. INSERTING A KEY INTO THE CYLINDER FOR EACH KEY SWITCH AND SIMULTANEOUSLY TURNING THEM TO THE 'ON' POSITION WILL MOMENTARILY UNLOCK THE LEVER-HANDLE ON THE ELECTRIFIED LOCKSET, ALLOWING ENTRY INTO THE ROOM.

4. THE DOOR WILL RETURN TO A CLOSED AND LOCKED STATE ONCE THE STRIKE TIME ON THE POWER SUPPLY HAS ELAPSED.

5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF POWER.

**Hardware Group No. 009**

For use on Door #(s):

009

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80P SAT	626	SCH
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 010**

For use on Door #(s):

EX008A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224HD EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	LMRX-MEL-25-R-NL-264 24 VDC	626	FAL
1	EA	MORTISE CYLINDER	20-001 114	626	SCH
1	EA	DOOR CLOSER	SC71A SS	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	655A-E	A	ZER
1	EA	CONTROLLER	CTE-MTB15-485-B	B	SCE
1	EA	POWER SUPPLY	PS902 900-2RS 900-BBK		VON
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL BE POSSIBLE AT ALL TIMES.
3. THE CARD READER SHALL CONTROL THE LOCKING AND UNLOCKING OF THE OPENING.
4. PRESENTING A VALID CREDENTIAL TO THE CARD READER WILL ELECTRICALLY RETRACT THE LATCHBOLT ON THE EXIT DEVICE, UNLOCKING THE DOOR TO ALLOW ACCESS.
5. THE DOOR WILL RETURN TO A CLOSED AND LOCKED STATE ONCE THE STRIKE TIME ON THE CARD READER EXPIRES.
6. THE DOOR SHALL REMAIN LOCKED UPON LOSS OF POWER.

**Hardware Group No. 011**

For use on Door #(s):

011A

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80P SAT	626	SCH
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 012**

For use on Door #(s):

EX011B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	STOREROOM LOCK	ALX80P SAT	626	SCH
1	EA	WRAP-AROUND PLATE	81-2-CW	630	DON
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA		BALANCE OF HARDWARE IS EXISTING.		EXI

NOTE:

1. CONTRACTOR AND SUPPLIER SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO ORDERING ANY MATERIAL.

**Hardware Group No. 013**

For use on Door #(s):

012

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	SET	CONSTANT LATCHING FLUSH BOLTS	FB51P/FB61P - AS APPROVED BY DOOR MFGR.	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	EU STOREROOM LOCK	ND80P6DEU RHO RX CON 12V/24V DC	626	SCH
2	EA	MORTISE CYLINDER	20-001 114	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	SC71A FA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401CCV	626	IVE
2	EA	SILENCER	SR64	GRY	IVE
1	EA	KEY SWITCH	653-1415 L2 12/24 VDC	630	SCE
1	EA	POWER SUPPLY	PS902 900-4RL 900-BBK 24VDC		VON
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		

**NOTES:**

1. WIRE THE TWO KEY SWITCHES TO THE ND80EU ELECTRIFIED LOCK IN THE FOLLOWING MANNER:

A. WIRE THE FIRST WIRE FROM THE ND80EU ELECTRIFIED LOCK TO THE (-) NEGATIVE TERMINAL OF THE POWER SUPPLY.

B. WIRE THE SECOND WIRE FROM THE ND80EU ELECTRIFIED LOCK TO THE NORMALLY OPEN ON THE MOMENTARY SIDE OF THE FIRST KEY SWITCH.

C. WIRE THE COMMON ON THE MOMENTARY SIDE OF THE FIRST KEY SWITCH TO THE NORMALLY OPEN ON THE MOMENTARY SIDE OF THE SECOND KEY SWITCH.

D. WIRE THE COMMON ON THE SECOND KEY SWITCH TO THE (+) TERMINAL OF THE POWER SUPPLY.

2. THE CYLINDER FOR EACH KEY SWITCH MUST BE KEYED TO A SEPARATE, DISTINCT KEY FROM THE REST OF THE BUILDING.

3. EACH CYLINDER FOR THIS APPLICATION WILL REQUIRE A DIFFERENT, PATENT-PROTECTED KEYWAY.

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.

2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.

3. INSERTING A KEY INTO THE CYLINDER FOR EACH KEY SWITCH AND SIMULTANEOUSLY TURNING THEM TO THE 'ON' POSITION WILL MOMENTARILY UNLOCK THE LEVER-HANDLE ON THE ELECTRIFIED LOCKSET, ALLOWING ENTRY INTO THE ROOM.

4. THE DOOR WILL RETURN TO A CLOSED AND LOCKED STATE ONCE THE STRIKE TIME ON THE POWER SUPPLY HAS ELAPSED.

5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF POWER.

**Hardware Group No. 014**

For use on Door #(s):

015

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	ALX10 ATH	643e	SCH
1	EA	SURFACE CLOSER	SC71A FA	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 015**

For use on Door #(s):

018                      116                      117                      120                      136                      137  
 139                      140                      019

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK W/ OUTSIDE INDICATOR	ND40S RHO OS-OCC	626	SCH
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**Hardware Group No. 016**

For use on Door #(s):

EX017

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ENTRANCE/OFFICE LOCK	ALX50P SAT	626	SCH
1	EA	WRAP-AROUND PLATE	81-2-CW	630	DON
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	BALANCE OF HARDWARE IS EXISTING.			EXI

NOTES:

1. THE CONTRACTOR AND SUPPLIER SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO ORDERING ANY MATERIAL.

**Hardware Group No. 017**

For use on Door #(s):

EX016A            EX142            EX167

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	EXISTING HARDWARE TO REMAIN -- NO WORK REQUIRED.			EXI



**Hardware Group No. 018**

For use on Door #(s):

EX-A.1

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	224HD EPT	628	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC PANIC HARDWARE	LMRX-MEL-25-R-NL-264 24 VDC	626	FAL
1	EA	MORTISE CYLINDER	20-001 114	626	SCH
1	EA	DOOR CLOSER	SC71A SS	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
1	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	655A-E	A	ZER
1	EA	CONTROLLER	CTE-MTB15-485-B	B	SCE
1	EA	POWER SUPPLY	PS902 900-2RS 900-BBK		VON
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL BE POSSIBLE AT ALL TIMES.
3. THE CARD READER SHALL CONTROL THE LOCKING AND UNLOCKING OF THE OPENING.
4. PRESENTING A VALID CREDENTIAL TO THE CARD READER WILL ELECTRICALLY RETRACT THE LATCHBOLT ON THE EXIT DEVICE, UNLOCKING THE DOOR TO ALLOW ACCESS.
5. THE DOOR WILL RETURN TO A CLOSED AND LOCKED STATE ONCE THE STRIKE TIME ON THE CARD READER EXPIRES.
6. THE DOOR SHALL REMAIN LOCKED UPON LOSS OF POWER.

**Hardware Group No. 019**

For use on Door #(s):

101                      102                      129                      144

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80P SAT	626	SCH
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**Hardware Group No. 020**

For use on Door #(s):

106	107	108	109	110	111
112A	113	EX119			

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	ALX70P SAT	626	SCH
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**Hardware Group No. 021**

For use on Door #(s):

104

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	224HD EPT	628	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC FIRE EXIT HARDWARE	RX-MEL-F-25-V-L-NL-LBRAFL-DANE 24 VDC	626	FAL
1	EA	ELEC FIRE EXIT HARDWARE	RX-MEL-F-25-V-L-NL-LBR-DANE 24 VDC	626	FAL
2	EA	MORTISE CYLINDER	20-001 114	626	SCH
2	EA	SURFACE CLOSER	SC71A FA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	WEATHERSTRIPPING	8217SBK PSA	BK	ZER
1	EA	CONTROLLER	CTE-MTB15-485-B	B	SCE
1	EA	POWER SUPPLY	PS902 900-2RS 900-BBK		VON
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		

**OPERATIONAL DESCRIPTION:**

1. THE DOORS SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL BE POSSIBLE AT ALL TIMES.
3. THE CARD READER SHALL CONTROL THE LOCKING AND UNLOCKING OF THE OPENING.
4. PRESENTING A VALID CREDENTIAL TO THE CARD READER WILL ELECTRICALLY RETRACT THE LATCHBOLTS ON THE EXIT DEVICES, UNLOCKING THE DOORS TO ALLOW ACCESS.
5. THE DOORS WILL RETURN TO A CLOSED AND LOCKED STATE ONCE THE STRIKE TIME ON THE CARD READER EXPIRES.
6. THE DOORS SHALL REMAIN LOCKED UPON LOSS OF POWER.

**Hardware Group No. 021A**

For use on Door #(s):

002B

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	224HD EPT	628	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC FIRE EXIT HARDWARE	RX-MEL-F-25-V-L-NL-LBRAFL- DANE 24 VDC	626	FAL
1	EA	ELEC FIRE EXIT HARDWARE	RX-MEL-F-25-V-L-NL-LBR- DANE 24 VDC	626	FAL
2	EA	MORTISE CYLINDER	20-001 114	626	SCH
2	EA	SURFACE CLOSER	SC71A FA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	WEATHERSTRIPPING	8217SBK PSA	BK	ZER
1	EA	CONTROLLER	CTE-MTB15-485-B	B	SCE
1	EA	POWER SUPPLY	PS902 900-2RS 900-BBK		VON
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		

OPERATIONAL DESCRIPTION:

1. THE DOORS SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL BE POSSIBLE AT ALL TIMES.
3. THE CARD READER SHALL CONTROL THE LOCKING AND UNLOCKING OF THE OPENING.
4. PRESENTING A VALID CREDENTIAL TO THE CARD READER WILL ELECTRICALLY RETRACT THE LATCHBOLTS ON THE EXIT DEVICES, UNLOCKING THE DOORS TO ALLOW ACCESS.
5. THE DOORS WILL RETURN TO A CLOSED AND LOCKED STATE ONCE THE STRIKE TIME ON THE CARD READER EXPIRES.
6. THE DOORS SHALL REMAIN LOCKED UPON LOSS OF POWER.
7. DOOR TO ALSO RELEASE ON REMOTE ACTIVATION. COORDINATE WITH OWNER'S SECURITY VENDOR.

**Hardware Group No. 022**

For use on Door #(s):

112B

Provide each SGL door(s) with the following:

QT Y		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBP6D RHO BATTERY OPERATED	626	SCE
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.
3. PRESENTING A VALID CREDENTIAL TO THE CARD READER LOCK WILL MOMENTARILY UNLOCK THE LEVER-HANDLE WILL TO ALLOW ACCESS.
4. THE LEVER-HANDLE WILL RETURN TO A LOCKED STATE ONCE THE INTERNAL STRIKE TIME ON THE CARD READER LOCK EXPIRES.
5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF BATTERY POWER.

**Hardware Group No. 023**

For use on Door #(s):

115

135

Provide each SGL door(s) with the following:

QT Y		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80P SAT	626	SCH
1	EA	DOOR CLOSER	SC71A SS	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**Hardware Group No. 024**

For use on Door #(s):

118

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-EO	626	FAL
1	EA	ELECTRONIC EXIT TRIM	XE360-EW-25R-OF-I-SM-NEP-P6	626	SCE
1	EA	SURFACE CLOSER	SC71A FA	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.
3. PRESENTING A VALID CREDENTIAL TO THE CARD READER LOCK WILL MOMENTARILY UNLOCK THE LEVER-HANDLE WILL TO ALLOW ACCESS.
4. THE LEVER-HANDLE WILL RETURN TO A LOCKED STATE ONCE THE INTERNAL STRIKE TIME ON THE CARD READER LOCK EXPIRES.
5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF BATTERY POWER.

**Hardware Group No. 025**

For use on Door #(s):

121

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	313AN	IVE
1	EA	PANIC HARDWARE	CD-25-C-C-718	643E	FAL
1	EA	PANIC HARDWARE	CD-25-C-EO	643E	FAL
1	EA	MORTISE CYLINDER	20-001 114	613	SCH
2	EA	MORTISE CYLINDER	20-001 114 XQ11-948	613	SCH
2	EA	OVERHEAD STOP	100S	613	GLY
2	EA	SURFACE CLOSER	SC71A FA	695	FAL
2	EA	MOUNTING PLATE	SC70A-18PA	695	FAL
2	EA	CUSH SHOE SUPPORT	SC70A-30	695	FAL
2	EA	BLADE STOP SPACER	SC70A-61	695	FAL
1	EA	DOOR SEAL	FURNISHED UNDER SECTION 08_41_00.	AL	B/O
1	EA	MEETING STILE ASTRAGAL	FURNISHED UNDER SECTION 08_41_00.	AL	B/O
2	EA	DOOR SWEEP	8198D	D	ZER
1	EA	THRESHOLD	654A-E	A	ZER

**Hardware Group No. 026**

For use on Door #(s):

122

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBP6D RHO BATTERY OPERATED	626	SCE
1	EA	OH STOP	90S	630	GLY
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	NARROW FRM BACK PLT	SC70A-18 FASTEN UTILIZING BOTTOM HOLES ONLY	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.
3. PRESENTING A VALID CREDENTIAL TO THE CARD READER LOCK WILL MOMENTARILY UNLOCK THE LEVER-HANDLE WILL TO ALLOW ACCESS.
4. THE LEVER-HANDLE WILL RETURN TO A LOCKED STATE ONCE THE INTERNAL STRIKE TIME ON THE CARD READER LOCK EXPIRES.
5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF BATTERY POWER.

**Hardware Group No. 027**

For use on Door #(s):

123.1

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	SET	CONSTANT LATCHING FLUSH BOLTS	FB51P/FB61P - AS APPROVED BY DOOR MFGR.	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	ALX80P SAT 1" STRIKE LIP LENGTH	626	SCH
2	EA	OH STOP	450S	630	GLY
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	OVERLAPPING ASTRAGAL	FURNISHED BY THE DOOR SUPPLIER.	600	B/O

**Hardware Group No. 028**

For use on Door #(s):

124A                    125                    126

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ALX50P SAT	626	SCH
1	EA	OH STOP	450S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 029**

For use on Door #(s):

124B

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	SET	CONSTANT LATCHING FLUSH BOLTS	FB51P/FB61P - AS APPROVED BY DOOR MFGR.	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	PASSAGE SET	ALX10 ATH 1" STRIKE LIP LENGTH	643e	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	FIRE/LIFE WALL MAG	SEM7830	689	LCN
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	GASKETING	488SBK PSA APPLY TO THE INSIDE OF THE OVERLAPPING ASTRAGAL.	BK	ZER
1	EA	OVERLAPPING ASTRAGAL	FURNISHED BY THE DOOR SUPPLIER.	600	B/O
2	EA	TRANSFORMER	4040SE-3210		LCN
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		
1	EA	FIRE ALARM CONTACT	FURNISHED UNDER DIVISION #28.		B/O

NOTES:

1. THE MAGNETIC HOLD-OPENS SHALL BE WIRED TO THE FIRE ALARM PANEL THROUGH A SET OF NORMALLY CLOSED, DRY CONTACTS.
2. THE FIRE ALARM CONTACTS SHALL BE PROVIDED BY THE FIRE ALARM CONTRACTOR.

OPERATIONAL DESCRIPTION:

1. THE MAGNETIC HOLD-OPENS SHALL BE CONTINUOUSLY ENERGIZED, ALLOWING THE DOORS TO BE HELD-OPEN UNDER NORMAL BUILDING CONDITIONS.

FIRE ALARM ACTIVATION:

1. IF THE FIRE ALARM IS ACTIVATED, POWER TO THE MAGNETIC HOLD-OPENS WILL BE DISCONNECTED, CAUSING THE DOORS TO CLOSE.



**Hardware Group No. 030**

For use on Door #(s):

138

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80P SAT	626	SCH
1	EA	OH STOP	90S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 031**

For use on Door #(s):

152

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80P SAT	626	SCH
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 032**

For use on Door #(s):

143

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	224HD	628	IVE
2	EA	PUSH PLATE	8200 4" X 16"	630	IVE
2	EA	PULL PLATE	8303 10" 4" X 16" G	630	IVE
2	EA	SURFACE CLOSER	SC71A FA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401CCV	626	IVE
2	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 033**

For use on Door #(s):

147

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	PUSH PLATE	8200 4" X 16"	630	IVE
2	EA	PULL PLATE	8303 10" 4" X 16" G	630	IVE
2	EA	OVERHEAD STOP	100S	613	GLY
2	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
2	EA	NARROW FRM BACK PLT	SC70A-18 FASTEN UTILIZING BOTTOM HOLES ONLY.	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 034**

For use on Door #(s):

145

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE W/ NON-REMOVABLE PIN	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBP6D RHO BATTERY OPERATED	626	SCE
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.
3. PRESENTING A VALID CREDENTIAL TO THE CARD READER LOCK WILL MOMENTARILY UNLOCK THE LEVER-HANDLE WILL TO ALLOW ACCESS.
4. THE LEVER-HANDLE WILL RETURN TO A LOCKED STATE ONCE THE INTERNAL STRIKE TIME ON THE CARD READER LOCK EXPIRES.
5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF BATTERY POWER.

**Hardware Group No. 035**

For use on Door #(s):

146

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	SET	CONSTANT LATCHING FLUSH BOLTS	FB51P/FB61P - AS APPROVED BY DOOR MFGR.	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	ALX80P SAT 1" STRIKE LIP LENGTH	626	SCH
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
1	EA	SURFACE CLOSER	SC71A FA RHR LEAF	689	FAL
1	EA	DOOR CLOSER	SC71A SS LHR LEAF	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	GASKETING	488SBK PSA APPLY TO THE INSIDE OF THE OVERLAPPING ASTRAGAL.	BK	ZER
1	EA	OVERLAPPING ASTRAGAL	FURNISHED BY THE DOOR SUPPLIER.	600	B/O

**Hardware Group No. 036**

For use on Door #(s):

170

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	ALX80P SAT	626	SCH
1	EA	SURFACE CLOSER	SC71A FA	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**Hardware Group No. 037**

For use on Door #(s):

171 (Alternate 1)

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	WIRELESS ELECTRONIC LOCK	NDEBP6D RHO BATTERY OPERATED	626	SCE
1	EA	SURFACE CLOSER	SC71A FA	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**OPERATIONAL DESCRIPTION:**

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.
3. PRESENTING A VALID CREDENTIAL TO THE CARD READER LOCK WILL MOMENTARILY UNLOCK THE LEVER-HANDLE WILL TO ALLOW ACCESS.
4. THE LEVER-HANDLE WILL RETURN TO A LOCKED STATE ONCE THE INTERNAL STRIKE TIME ON THE CARD READER LOCK EXPIRES.
5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF BATTERY POWER.

**Hardware Group No. 038**

For use on Door #(s):

172 (Alternate 1) 174 (Alternate 1)

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRANCE/OFFICE LOCK	ALX50P SAT	626	SCH
1	EA	WRAP-AROUND PLATE	81-2-CW	630	DON
1	EA	SURFACE CLOSER	SC71A FA	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 039**

For use on Door #(s):

EX-A.2            EX-A.3

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	POWER TRANSFER	EPT10	689	VON
1	EA	ELEC FIRE EXIT HARDWARE	RX-FSA-F-25-R-L-DANE 24 VDC	626	FAL
1	EA	MORTISE CYLINDER	20-001 114	626	SCH
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	CONTROLLER	CTE-MTB15-485-B	B	SCE
1	EA	POWER SUPPLY	PS902 900-FA 900-BBK		VON
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		
1	EA	FIRE ALARM CONTACT	FURNISHED UNDER DIVISION #28.		B/O

NOTES:

1. THE 'FA' OPTION BOARD INSIDE THE POWER SUPPLY SHALL BE CONNECTED TO THE FIRE ALARM PANEL THROUGH A SET OF NORMALLY-CLOSED, DRY CONTACTS.
2. THE FIRE ALARM CONTACTS SHALL BE SUPPLIED BY THE FIRE ALARM CONTRACTOR.

OPERATIONAL DESCRIPTION:

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL BE POSSIBLE AT ALL TIMES.
3. THE LOCKING AND UNLOCKING OF THE ELECTRIFIED TRIM SHALL BE CONTROLLED BY THE CARD READER.
4. WHEN A VALID CARD IS SWIPED THROUGH THE CARD READER, POWER TO THE ELECTRIFIED TRIM WILL BE MOMENTARILY REMOVED, UNLOCKING THE DOOR TO ALLOW ACCESS.
5. WHEN THE STRIKE TIME ON THE CARD READER EXPIRES, POWER TO THE ELECTRIFIED TRIM WILL BE RESTORED, RE-SECURING THE OPENING.
6. THE DOOR SHALL UNLOCK UPON LOSS OF POWER.

FIRE ALARM ACTIVATION:

1. IF THE FIRE ALARM IS ACTIVATED, POWER TO THE ELECTRIFIED TRIM WILL BE REMOVED, UNLOCKING THE DOOR TO ALLOW FREE INGRESS.

**Hardware Group No. 040**

For use on Door #(s):

EX130

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-L-DANE	626	FAL
1	EA	MORTISE CYLINDER	20-001 114	626	SCH
1	EA	SURFACE CLOSER	SC71A FA	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**Hardware Group No. 041**

For use on Door #(s):

EX131

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	ALX70P SAT	626	SCH
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER

**Hardware Group No. 042**

For use on Door #(s):

EX013                      EX014

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	WIRELESS ELECTRONIC LOCK	NDEBP6D RHO BATTERY OPERATED	626	SCE
1	EA	CUSTOM WRAP- AROUND PLATE	4-2-CW	630	DON
1	EA	DOOR CLOSER	SC71A REG - (PULL SIDE MOUNT)	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA		BALANCE OF HARDWARE IS EXISTING.		EXI

NOTES:

1. THE CONTRACTOR AND SUPPLIER SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO ORDERING ANY MATERIAL.
2. REPLACE EXISTING HINGE PINS WITH NON-REMOVABLE PINS.

OPERATIONAL DESCRIPTION:

1. THE DOOR SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL ALWAYS BE POSSIBLE.
3. PRESENTING A VALID CREDENTIAL TO THE CARD READER LOCK WILL MOMENTARILY UNLOCK THE LEVER-HANDLE WILL TO ALLOW ACCESS.
4. THE LEVER-HANDLE WILL RETURN TO A LOCKED STATE ONCE THE INTERNAL STRIKE TIME ON THE CARD READER LOCK EXPIRES.
5. THE DOOR WILL REMAIN LOCKED UPON LOSS OF BATTERY POWER.

**Hardware Group No. 043**

For use on Door #(s):

EX016B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	PANIC HARDWARE	CD-25-R-L-DANE	626	FAL
1	EA	MORTISE CYLINDER	20-001 XQ11-948	626	SCH
1	EA	RIM CYLINDER	20-022	626	SCH
1	EA	DOOR CLOSER	SC71A SS	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

**Hardware Group No. 044**

For use on Door #(s):

EX100

Provide each PR door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	224HD EPT	628	IVE
2	EA	POWER TRANSFER	EPT10	689	VON
1	EA	KEYED REM. MULLION	KR4954 STAB	689	VON
1	EA	ELEC PANIC HARDWARE	LMRX-MEL-25-R-DT 24 VDC	626	FAL
1	EA	ELEC PANIC HARDWARE	LMRX-MEL-25-R-NL 24 VDC	626	FAL
1	EA	MORTISE CYLINDER	20-001 114	626	SCH
1	EA	RIM CYLINDER	20-022	626	SCH
2	EA	SURFACE CLOSER	SC71A FA	689	FAL
2	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
2	EA	WALL STOP	WS401CCV	626	IVE
1	EA	RAIN DRIP	142AA	AA	ZER
1	EA	GASKETING	429AA-S	AA	ZER
2	EA	DOOR SWEEP	8198AA	AA	ZER
1	EA	THRESHOLD	655A-E	A	ZER
1	EA	CONTROLLER	CTE-MTB15-485-B	B	SCE
1	EA	POWER SUPPLY	PS902 900-2RS 900-BBK		VON
1	EA		RISER/ELEVATION DRAWING		
1	EA		POINT TO POINT DIAGRAM		

**OPERATIONAL DESCRIPTION:**

1. THE DOORS SHALL BE NORMALLY CLOSED AND LOCKED.
2. FREE EGRESS SHALL BE POSSIBLE AT ALL TIMES.
3. THE CARD READER SHALL CONTROL THE LOCKING AND UNLOCKING OF THE OPENING.
4. PRESENTING A VALID CREDENTIAL TO THE CARD READER WILL ELECTRICALLY RETRACT THE LATCHBOLTS ON THE EXIT DEVICES, UNLOCKING THE DOORS TO ALLOW ACCESS.
5. THE DOORS WILL RETURN TO A CLOSED AND LOCKED STATE ONCE THE STRIKE TIME ON THE CARD READER EXPIRES.
6. THE DOORS SHALL REMAIN LOCKED UPON LOSS OF POWER.



**Hardware Group No. 045**

For use on Door #(s):

EX132

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ENTRANCE/OFFICE LOCK	ALX50P SAT	626	SCH
1	EA	WRAP-AROUND PLATE	81-2-CW	630	DON
1	EA	SURFACE CLOSER	SC71A FA	689	FAL
1	EA	KICK PLATE	8400 10" X 1 1/2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS401CCV	626	IVE
1	EA	GASKETING	488SBK PSA	BK	ZER
1	EA	BALANCE OF HARDWARE IS EXISTING.			EXI

NOTES:

1. THE CONTRACTOR AND SUPPLIER SHALL VERIFY THE EXISTING CONDITIONS PRIOR TO ORDERING ANY MATERIAL.

**Hardware Group No. 046**

For use on Door #(s):

EX008B

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA		REMOVE THIS DOOR DURING DEMOLITION.		EXI

**Hardware Group No. MISC. HARDWARE**

For use on Door #(s):

MISC-HDWE

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	MULTITECH READER	MT20W USB	BLK	SCE
1	EA	POWER SUPPLY	PS902 900-BBK		VON
200	EA	CREDENTIAL	9651	BLK	SCE

END OF SECTION

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 designated on Drawings and scheduled.
    - a. Glass products.
    - b. Laminated glass.
    - c. Insulated glass.
    - d. Fire- protection-rated glazing.
  - 2. Glazing sealants and accessories.
  - 3. Glass with decorative film overlay (Glazing Films).

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 according to ASTM C 1036.
- C. IBC: International Building Code.

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 SUBMITTALS

- A. Product Data: For each type of product.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass, 12 inches square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

- D. Product Certificates: For glass.
- E. Product Test Reports: For insulating 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.
- F. Preconstruction adhesion and compatibility test report.
- G. Sample Warranties: For special warranties.

#### 1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.
- B. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- C. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

#### 1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: For insulated or laminated glass types installed with glazing sealants, test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
  - 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
  - 2. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
  - 3. Test no fewer than eight samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
  - 4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
  - 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including the use of specially formulated primers.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

#### 1.9 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.

#### 1.10 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

- B. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: Five years from date of Substantial Completion.

- C. 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 the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 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 the following: 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. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the criteria noted:

1. Provide fully tempered glass in insulated units where required for safety glazing.

- C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined according to the IBC and ASTM E 1300.

1. Design Wind Pressures: Determine design wind pressures applicable to Project according to ASCE/SEI 7, based on heights above grade indicated on Drawings.

- a. Wind Design Data: As indicated on Drawings.
  2. Design Snow Loads: As indicated on Drawings.
  3. Thickness of Patterned Glass: Base design of patterned glass on thickness at thinnest part of the glass.
  4. Probability of Breakage for Sloped Glazing: For glass surfaces sloped more than 15 degrees from vertical, design glass for a probability of breakage not greater than 0.001.
  5. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
  6. Differential Shading: Design glass to resist thermal stresses induced by differential shading within individual glass lites.
- D. Safety Glazing: Where safety glazing is indicated and required, provide glazing that complies with 16 CFR 1201, Category II.
1. Provide safety glazing in all hazardous locations as defined and listed in the Ohio Building Code OBC 2017, Section 2406. The following is a general list of required safety glazing locations., it is not meant to be inclusive of all required locations:
    - a. Glazing in swinging doors
    - b. Glazing in sliding doors.
    - c. Glazing in panels adjacent to door openings within 24 inches of the opening edge up to 60 inches above the floor.
    - d. Glazing in panels with all of the following: bottom edge below 18 inches above the floor, top edge 36 inches above the floor, walking surface within 36 inches of the panel and overall area of panel is greater than 9 square feet.
- E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
  2. For laminated-glass lites, properties are based on products of construction indicated.
  3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
  4. U-Factors: Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F.
  5. Solar Heat-Gain Coefficient and Visible Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW computer program.
  6. Visible Reflectance: Center-of-glazing values, according to NFRC 300.

## 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.
1. NGA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
  2. AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIR A7, "Sloped Glazing Guidelines."
  3. IGMA Publication for Sloped Glazing: IGMA TB-3001, "Guidelines for Sloped Glazing."
  4. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."

- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than the thickness indicated.
  - 1. Minimum Glass Thickness for Exterior Lites: 6 mm.
  - 2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.
- D. Strength: Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

### 2.3 GLASS PRODUCTS

- A. Refer to schedule at end of section for applicable glass products utilized on Project.
- B. Fully Tempered Float Glass: ASTM C 1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
  - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- C. Heat-Strengthened Float Glass: ASTM C 1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
  - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.

### 2.4 FIRE-PROTECTION-RATED GLAZING

- A. Fire-Protection-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on positive-pressure testing according to NFPA 257 or UL9, including the hose-stream test, and shall comply with NFPA 80.
  - 1. Fire-protection-rated glazing required to have a fire-protection rating of 20 minutes shall be exempt from the hose-stream test.
- B. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name; test standard; whether glazing is permitted to be used in doors or openings; if permitted in openings, whether or not glazing has passed the hose-stream test; whether or not glazing meets 450 deg. F temperature-rise limitation; and the fire-resistance rating in minutes.
- C. Fire-Protection-Rated Tempered Glass: 6-mm thickness, fire-protection rated tempered glass; and complying with 16 CFR 1201, Category II.
  - 1. Products: Subject to compliance with requirements, provide one of products listed in schedule, if applicable.

- D. Fire-Protection-Rated Monolithic Glass for Doors and Protected Openings: 19-mm thickness; low-iron fire-protection-rated glass; complying with 16 CFR 1201, Category II. UL listed and tested in accordance with NFPA 252 for fire-rated doors and NFPA 257 for protected openings with hose-stream testing.
  - 1. Products: Subject to compliance with requirements, provide SAFTI First, SuperClear 45-HS.
- E. Fire-Protection-Rated Monolithic Glass for Doors Only: 19-mm thickness; clear, fire-protection glass; complying with 16 CFR 1201, Category II. UL listed and tested in accordance with NFPA 252 for fire-rated doors with hose-stream testing.
  - 1. Products: Subject to compliance with requirements, provide SAFTI First, SuperLite X-45/60/90.
    - a. For use in 100 square inch door openings.
- F. Fire Protection-Rated Film Faced Ceramic Glazing: Clear, ceramic flat glass; 5-mm thickness; faced on one surface with a clear glazing film; and complying with 16 CFR 1201, Category II.
  - 1. Products: Subject to compliance with requirements, provide one of products listed in schedule, if applicable.
- G. See attached schedule, at the end of this section, for Fire-Protection-Rated Glazing manufacturers and products.

## 2.5 LAMINATED GLASS

- A. Laminated Glass: ASTM C 1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
- B. Interlayer: Structural polyvinyl butyral or ionomeric polymer interlayer.
  - 1. Products:
    - a. Eastman Chemical Company: Saflex Clear.
    - b. Kuraray America, Inc.: SentryGlas or Trosifol Clear.
  - 2. Construction: Laminate glass with polyvinyl butyral or ionomeric polymer interlayer to comply with interlayer manufacturer's written instructions.
    - a. Laminated glass interlayers for ratings of fire-protection or fire-resistance glazing can be based on other products per the manufacturers.
  - 3. Interlayer Thickness: Provide thickness not less than that indicated and as needed to comply with requirements.
  - 4. Interlayer Color: Clear unless otherwise indicated.

## 2.6 INSULATING GLASS, IG-X

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190.
  - 1. Sealing System: Dual seal, with polyisobutylene and silicone primary and secondary sealants.

2. Spacer Manufacturer/Model: Provide manufacturer's standard corner construction. No aluminum, foam or all thermoplastic spaces are permitted.
  - a. TechnoForm Glass Insulation: TGI spacer, light gray.
  - b. Roll Tech: Chromatech Ultra, light gray.
  - c. Thermix: Thermix TX-N Plus, light gray.
  - d. Viracon: VTS Viracon Thermal Spacer, standard black matte.
3. Desiccant: Molecular sieve or silica gel, or a blend of both.

## 2.7 GLAZING SEALANTS

### A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, 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 selected by Architect from manufacturer's full range.

### B. Glazing Sealant: Nonstaining silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.

1. Subject to compliance with requirements provide one of the following:
  - a. Dow Corning Corporation; 795.
  - b. GE Silicones; SilPruf NB.
  - c. Pecora Corporation; 895NST.
  - d. Tremco Incorporated, Spectrum 2.

### 2. Color: Black.

### C. Glazing Sealants for Fire-Resistive and Fire Protective Glazing Products: Identical to products used in test assemblies to obtain fire-protection rating.

## 2.8 GLAZING ACCESSORIES

### A. General: Provide products of material, size, and shape complying with referenced glazing standard, with requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

1. Fire-Resistive and Fire-Protective Products; Approved by testing agencies that listed and labeled fire resistive and fire protective glazing products with which products are used for applications and ratings indicated. Comply with manufacturer's requirements.

### B. 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 C 1281 and AAMA 800 for products indicated below:



1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
  2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
- C. 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 the 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.
- D. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- E. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- F. Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- G. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- H. Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- I. Perimeter Insulation for Fire Resistance Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

## 2.9 GLAZING FILM

- A. Decorative Film Overlay (Glazing Films): Translucent, dimensionally stable, cast PVC film, 2-mil minimum thickness, with pressure-sensitive, clear adhesive back for adhering to glass and releasable protective backing.
- B. Basis of Design: Subject to compliance with requirements, provide SX-SG09 Silver / Grey One Way Privacy Film by Solyx Films, LLC or comparable product by one of the following:
1. Glazing Film Type GF-1:
    - a. 3M.
    - b. Llumar - Eastman Performance Films.
    - c. Solar Gard- Saint Gobain.
- C. Basis of Design: Subject to compliance with requirements, provide SXWF-BO Blackout Film by Solyx Films, LLC or comparable product by one of the following:
1. Glazing Film Type GF-2:
    - a. 3M.
    - b. Llumar - Eastman Performance Films.
    - c. Solar Gard- Saint Gobain.

- D. Refer to Drawings for locations.

## 2.10 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.
    - a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.
- D. Decorative Film Overlay (Glazing Films): Apply squarely aligned to glass edges, uniformly smooth, and free from tears, air bubbles, wrinkles, and rough edges, according to manufacturer's written instructions, including surface preparation and application temperature limitations and as follows for various film types:
  - 1. In single sheet completely overlaying the back face of clean glass.

## 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.
- 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 according to 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.
  - 1. For fire rated glazing, place coatings or film facing fire side.
- J. Where wedge-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 by gasket manufacturer.
- L. Glazing Film: When utilized install glazing film per manufacturers installation instructions.

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. 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.
- G. Fire resistive and Fire Protective Glazing: Install tapes and sealants per manufacturer's instructions.

### 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 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 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 come into 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 GLASS SCHEDULE

- A. See attached schedule.

END OF SECTION

Carroll County Office Renovation

Glass Schedule										
Ext. Glass Type (IG-#)	Fire Rating (minutes)	Thickness	Description/Application	Manufacturer/Product		Insulated Unit Info			Description	
						Visible %	Winter U Value	Solar Heat Gain Coefficient		
IG-3	NA	1"	Insulated/Exterior	Vitro	SOLARBAN 60 (2) Clear + Clear	70	0.29	0.39	Vitro Clear w/ Solerban 60 Low-E Coating on #2 surface (Outboard Lite), Argon filled airspace, Vitro Clear (inboard Lite).	
				Guardian	SN 68 (2) Clear + Clear	68	0.25	0.37	Sunguard Clear w/ SN 68 Low-E Coating on #2 surface (Outboard Lite), Argon filled airspace, Sunguard Clear (inboard Lite).	
				Viracon	VE1-2M, VE-2M (2) Clear + Clear	70	0.30	0.38	Viracon Clear w/ VE-2M Low-E Coating on #2 surface (Outboard Lite), Argon filled airspace, Viracon Clear (inboard Lite).	
Interior	NA	1/4"	Clear Fully Tempered							
	NA	3/8"	Clear Fully Tempered							
	NA	1/2"	Clear Fully Tempered							
	20			Fire Protection Rated (Tempered Safety)	Technical Glass Products	Fireglass 20				20 Minute rating for use in doors in Smoke Barriers, 1 hr corridor fire partitions.
					SAFTI First	Superlite I				
					Vetrotech Saint-Gobain	PyroSwiss 20				
	45			Fire Protection Rated (Monolithic Safety)	SAFTI First	SuperClear 45-HS				45 minute rating for use in doors, sidelights, transoms and openings.
	45 to 90, for 100 SI in doors			Fire Protection Rated (Monolithic Safety)	SAFTI First	SuperLite X-45/60/90				For 100 square inch door lites only. Good for 45, 60 and 90 minute temperature rise doors.
45 to 90, 180 for doors			Fire Protection Rated (Filmed Ceramic)	Technical Glass Products	FireLite NT				Provide glazing with rating as required per door and wall fire rating. For use in 45, 60 and 90 minute rated non-temp rise doors, sidelights, transoms and openings. For use in temp rise doors up to 120 minutes rating for 100 square inch door lites only.	
				Schott North America	Pyran Platinum F					
				Vetrotech Saint-Gobain	Keralite Select Filmed					

Notes:

- 1) For Insulated units, provide fully tempered glass where required for safety glazing.
- 2) For glazing types in interior doors and interior door frames containing sidelights or transoms, refer to Door & Frames Schedule/Details drawing.
- 3) For glazing types in all other interior frames, refer to Floor Plans and A7 Series.
- 4) For glazing types in exterior doors and exterior frames/windows, refer to Exterior Elevations and Exterior Frame Types drawing.

SECTION 091001  
FLOOR PREPARATION

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 hydraulic cement floor underlayments:
  - 1. Trowelable underlayment.
  - 2. Fill underlayment.
  - 3. Floor substrate testing.
  - 4. Floor substrate preparation and remediation.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Coordinate this section's work with Division 09 resilient flooring sections work.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturers product data and installation instructions for each type of product indicated.
- B. Test Reports: Submit field test reports, with location of test indicated for the following;
  - 1. Concrete slab moisture vapor transmission rate.
  - 2. Concrete slab alkalinity.
  - 3. Concrete slab absorption (porosity).
- C. Qualification Data: For Installer.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Installer must be approved by manufacturer for application of underlayment products required for this Project.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.
  - 1. Store materials in a dry area with temperatures maintained between 50 deg F and 85 deg F and protect from sunlight.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ventilation, ambient temperature and humidity, and other conditions affecting underlayment performance.
  - 1. Place hydraulic-cement-based underlayments only when ambient temperature and temperature of substrates are between 65 and 80 deg F.

1.8 COORDINATION

- A. Coordinate application of underlayment with requirements of floor-covering products and adhesives, to ensure compatibility of products.
- B. Preinstallation Conference: Conduct conference at project site coordinated with the various floor-covering products Preinstallation Conference.

PART 2 - PRODUCTS

2.1 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.
  - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 GENERAL

- A. Resilient Flooring Installations.
  - 1. At all resilient flooring installations, the entire floor substrate is to have a continuous trowelable underlayment applied to produce a uniform and smooth substrate.

2.3 HYDRAULIC CEMENT TROWELABLE UNDERLAYMENTS (Trowelable Underlayment)

- A. Trowelable Underlayment: Polymer-modified, trowelable, hydraulic-cement product that can be applied to a maximum uniform thickness of 1/2 inch and that can be feathered at edges to match adjacent floor elevations.



1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Ardex; SKM or Feather Finish.
  - b. Euclid Chemical Company; Tamms Thin Patch
  - c. MAPEI Corporation; Planipatch.
  - d. Schonox- HPS North America, SL.
2. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
3. Compressive Strength: Not less than 3,500 psi at 28 days when tested according to ASTM C 109/C 109M.
4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.

#### 2.4 HYDRAULIC CEMENT FILL UNDERLAYMENTS (Fill Underlayment)

- A. Fill Underlayment and Patching Compound: Polymer-modified, trowelable, hydraulic-cement product that can be applied in minimum uniform thickness of 1/16 inch up to 1-inch level with feathered edges. Product can fill voids or be sloped up to 3 inches with use of aggregate.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Ardex; SD-P
    - b. Euclid Chemical Company; Tammspatch II
    - c. MAPEI Corporation; Mapecem Quickpatch.
    - d. Schonox- HPS North America, RF.
  2. Cement Binder: ASTM C 150, portland cement, or hydraulic or blended hydraulic cement as defined by ASTM C 219.
  3. Compressive Strength: Not less than 3500 psi at 28 days when tested according to ASTM C 109/C 109M.
  4. Underlayment Additive: Resilient-emulsion product of underlayment manufacturer, formulated for use with underlayment when applied to substrate and conditions indicated.

#### 2.5 ACCESSORIES

- A. Aggregate (For Fill Underlayments): Well-graded, washed gravel, 1/8 to 1/4 inch; or coarse sand as recommended by underlayment manufacturer.
  1. Provide aggregate when recommended in writing by underlayment manufacturer for underlayment thickness required.
- B. Water: Potable and at a temperature of not more than 70 deg F.
- C. Primer: Product of underlayment manufacturer recommended in writing for substrate, conditions, and application indicated.
  1. Primer products are to be determined and approved by manufacturer for specific concrete substrates that are either absorbent or are determined to be non-porous.
- D. Low Viscosity Rigid Joint Filler: Two-part polyurethane or epoxy with low viscosity for filling cracks and control joints (saw cuts) prior to installation of cementitious underlayments.

1. Products: Subject to compliance with requirements, provide one of the following:
  - a. Ardex; Ardex Ardifix, Low Viscosity Rigid Polyurethane Crack and Joint Filler.
  - b. Euclid Chemical Company., Inc.; EUCO 700, Semi-Rigid Industrial Floor Joint Filler.
  - c. MAPEI Corporation; Planibond JF, Semi-Rigid, Epoxy Joint Filler.
  - d. Schonox- HPS North America, SGH.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, with Installer present, for conditions affecting performance.
  1. Proceed with application only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. General: Prepare and clean substrate according to manufacturer's written instructions.
  1. Treat nonmoving substrate cracks and control joints (sawcuts) according to manufacturer's written instructions to prevent cracks and control joints from telegraphing (reflecting) through underlayment.
    - a. Dormant, non-moving cracks and control joints (sawcuts) are to be cleaned out full depth or opened up with a crack chaser saw as required.
    - b. Follow by vacuuming cracks and joints so they are free of all dust, dirt, oils and any other debris.
  2. Fill any substrate voids to prevent underlayment from leaking.
- B. Concrete Substrates: Prepare according to ASTM F 710.
  1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  2. Mechanically 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.
    - a. Shotblast areas with contaminants or use another manufacturer approved method that is done per the International Concrete Repair Institute Guideline ICRI No. 312.R2.2013.
    - b. Removal must be deep enough to eliminate all penetrated contaminants down to sound, solid concrete.
  3. Alkalinity and Adhesion Testing: Perform tests recommended by resilient flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 7 or more than 9 pH.

4. Moisture Testing: Proceed with installation only after substrates pass testing according to carpet and resilient sheet flooring manufacturer's written recommendations, but not less stringent than the following:
  - a. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1,000 sq. ft. in 24 hours.
  - b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level, at ¼ slab depth.
5. Absorption (Porosity) Testing: Concrete substrates are to be tested to establish the substrates water absorption (porosity). This assessment will allow the determination of appropriate surface preparation and which of the manufacturer's primers are to be utilized.
  - a. Test for porosity per ASTM F3191.
  - b. Extremely absorbent concrete may require two applications of primer per manufacturer's instructions.
  - c. Concrete treated with admixtures may be non-porous. Prepare surfaces according to manufacturer's written instructions and provide manufacturer's recommended primer.
- C. Remove existing flooring, including underlayments, and setting beds (where applicable) to expose a sound substrate. Grind substrates if required to thoroughly remove any traces of the floor material adhesive or other foreign material.
- D. Adhesion Tests: After substrate preparation, test substrate for adhesion with underlayment according to manufacturer's written instructions.

### 3.3 APPLICATION

- A. General: Mix and apply underlayment components according to manufacturer's written instructions.
  1. Close areas to traffic during underlayment application and for time period after application recommended in writing by manufacturer.
  2. Coordinate application of components to provide optimum underlayment-to-substrate and intercoat adhesion.
  3. Substrate Expansion, Isolation, and other Moving Joints: Allow joint of same width to continue through underlayment.
    - a. Expansion and isolation joints, and any other joint that will move, must be honored/kept clear of underlayment materials.
      - 1) Seal joints with backer rod and flexible sealant after installation of the topping underlayment system at locations that are not designated to receive an expansion joint cover.
  4. Cracks and Control Joints: Treat dormant, non-moving cracks and dormant control joints (sawcuts) as follows:
    - a. Hairline cracks less than 1/32" can have trowelable underlayment troweled down into them.

- b. Non-moving control joints and cracks up to 1/8" are to have trowelable underlayment placed to refusal or low viscosity rigid joint filler full depth.
  - 1) Sand broadcast over low viscosity rigid joint filler as required by underlayment manufacturer's instructions.
- c. Non-moving control joints and cracks over 1/8" are to have low viscosity rigid joint filler full depth.
  - 1) Sand broadcast over low viscosity rigid joint filler as required by underlayment manufacturer's instructions.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Trowelable Underlayments: Apply to produce a uniform, smooth surface.
  - 1. Apply a continuous skim coat over entire floor surface.
    - a. Install at the thickness required so that dormant joints and cracks and surface profile irregularities will not telegraph through the floor covering.
      - 1) Minimum thickness to not be less than 1/16" (0.063").
  - 2. Apply trowelable underlayment at required thickness to correct subfloor irregularities and floor depressions.
  - 3. Feather edges to match adjacent floor elevations, floors at drains and expansion and isolation joints.
  - 4. Apply trowelable underlayment at transition edge between resilient flooring and dissimilar flooring materials to allow for a "flush" transition. The slope of the underlayment shall provide for a gradual transition to the thicker flooring material.
  - 5. Apply trowelable underlayment at door openings where the bottom of door frames are above the concrete slab surface.
    - a. Place trowelable underlayment up to the bottom of the door frames and continuous at this height across the door opening.
    - b. Feather the trowelable underlayment down in both directions from the door opening over a distance of 24 inches.
  - 6. Trowelable underlayment shall be steel troweled smooth and sanded. Trowel marks showing through installed flooring shall be reason to remove flooring and sand out trowel marks.
  - 7. Provide sloped underlayment at drains and where indicated.
- D. Fill Underlayments: Apply to fill voids exceeding 1/2-inch-deep in concrete substrates. Apply to produce a uniform, level or sloping surface up to 1 inch deep or up to 3 inches deep with aggregate.
  - 1. When aggregate is used, apply a final layer without aggregate for a smooth surface.
  - 2. Feather edges to match adjacent floor elevations.
  - 3. Fill underlayment shall be steel troweled smooth and sanded. Trowel marks showing through installed flooring shall be reason to remove flooring and sand out trowel marks.
  - 4. Provide sloped underlayment at drains and where indicated.
- E. Cure underlayment according to manufacturer's written instructions. Prevent contamination during application and curing processes.

- F. Do not install floor coverings over underlayment until after time period recommended in writing by underlayment manufacturer.
- G. Remove and replace underlayment areas that evidence lack of bond with substrate, including areas that emit a "hollow" sound when tapped.

3.4 PROTECTION

- A. Protect underlayment from concentrated and rolling loads for remainder of construction period.

END OF SECTION

SECTION 092216

NON-STRUCTURAL METAL FRAMING

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. Non-load-bearing steel framing systems for interior partitions.
2. Pony Wall Support Framing
3. Extruded Aluminum Partition Closure for partition wall terminations.
4. Suspension systems for interior ceilings and soffits.
5. Grid suspension systems for gypsum board ceilings.

B. Related Requirements:

1. Section 054000 "Cold-Formed Metal Framing" for exterior and interior load-bearing and exterior non-load-bearing wall studs; floor joists; and roof rafters and ceiling joists.

1.3 SUBMITTALS

A. Product Data: Manufacturers technical literature for each type of product and system indicated.

1. Include manufacturers specifications for materials, construction details and installation instructions.
2. For embossed stud products, provide manufacturers limiting height tables for the stud framing being used and highlight the studs being proposed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.
- B. Sound Control Partitions: For sound control assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.
- C. Horizontal Deflection:

1. For composite and non-composite wall assemblies, limited to L/240 of the wall height based on horizontal loading of 5 lbf/sq. ft.
2. For composite and non-composite wall assemblies with applied ceramic tile, limited to L/360 of the wall height based on horizontal loading of 5 lbf/sq. ft.

D. Steel Stud Manufacturers Association (SSMA): Conventional metal stud designations, stud and track section properties, limiting wall heights, bracing requirements and other requirements are to be based on the SSMA Technical Guide as well as requirements adopted by the Authority Having Jurisdiction and the stud and track manufacturers product data.

## 2.2 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C754 for conditions indicated.

1. Steel Sheet Components: Comply with AISI S220 and ASTM C645, Section 10 requirements for steel unless otherwise indicated.
2. Protective Coating: ASTM A653/A653M, G40 (Z120) hot-dip galvanized unless otherwise indicated.
  - a. Coating with equivalent corrosion resistance of ASTM A 653/A 653M, G40 (Z120) or Clark Dietrich DiamondPlus® coating; roll-formed from steel meeting mechanical and chemical requirements of ASTM A 1003 with a zinc-based coating are acceptable. Galvannealed products are not acceptable.
    - 1) Coatings shall demonstrate equivalent corrosion resistance with an evaluation report acceptable to the authorities having jurisdiction.
  - b. Provide G60 (Z180) for structural designated framing.
3. Definitions - The following are to aid in the use of this specification and to indicate when channel bridging is required for wall bracing. Refer to metal framing manufactures definitions and requirements and with the SFIA or SSMA definitions and requirements for wall assembly design.
  - a. Composite Wall Assemblies – Gypsum Board, 5/8-inch Type X, installed full height on both sides steel stud and track framing. No horizontal bracing (Channel Bridging) required.
  - b. Non-Composite Fully Braced Wall Assemblies – Gypsum Board, 5/8-inch Type X, installed on steel stud and track framing.
    - 1) Gypsum board installed only to ceiling height on both sides to have horizontal bracing (Channel Bridging) as required through the framing above the gypsum board.
    - 2) Gypsum board installed full height one side and ceiling height on the other to have horizontal bracing (Channel Bridging) as required through the framing above the gypsum board.
  - c. Non-Composite Braced at 48" o.c. Wall Assemblies – Gypsum Board, 5/8-inch Type X, installed full height on one side of steel stud and track framing. Framing to have horizontal bracing (Channel Bridging) at 48 inches on center with horizontal bracing maximum 12 inches from the top of the assembly.

B. Studs and Tracks: AISI S220 and ASTM C645, Section 10. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks as follows:

1. Conventional Steel Studs and Tracks:
    - a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products may be incorporated into the work.
    - b. Typical Minimum Base-Steel Thickness: 0.0296 inch (30 mil, 33 ksi) unless horizontal deflection performance requires greater thickness.
      - 1) Structural Studs: Provide 0.0329-inch (33 mil, 33 ksi) or 0.0428-inch (43 mil, 33 ksi) studs at locations where indicated on Drawings and as required for horizontal deflection requirements.
    - c. Flange Size: 1-1/4 inches for 30 and 33 mil, minimum 1-3/8 inches for 43 mil.
    - d. Web Depth: As indicated on Drawings.
    - e. Maximum Spacing: 16 inches on center, unless noted otherwise.
  2. Embossed Steel Studs and Tracks: Roll-formed and embossed with surface deformations to stiffen the framing members matching conventional ASTM C645 steel studs and tracks.
    - a. Manufacturers/Products: Subject to compliance with requirements provide products by one of the following:
      - 1) Clark Dietrich; ProSTUD 30 (30 mil., 33 ksi).
      - 2) MarinoWARE; Viper 30 (30 mil., 33 ksi).
      - 3) Telling Industries; Viper 30 (30 mil., 33 ksi).
    - b. Flange Size: 1-1/4 inches.
    - c. Web Depth: As indicated on Drawings.
    - d. Maximum Spacing: 16 inches on center, unless noted otherwise.
  3. Embossed Steel Studs and Tracks, Equivalent Gage: Roll-formed and embossed with surface deformations to stiffen the framing members so that they are structurally comparable to conventional ASTM C645 steel studs and tracks.
    - a. Contractor is to verify that proposed wall assemblies meet manufacturers limiting wall heights per listed requirements and manufacturers definitions and requirements for stud and track thickness proposed for use.
    - b. Manufacturers/Products: Subject to compliance with requirements provide products by one of the following:
      - 1) Clark Dietrich; ProSTUD 20 EQ (18 mil., 70 ksi).
      - 2) MarinoWARE; Viper 20 EQ (18 mil., 70 ksi).
      - 3) Telling Industries; Viper 20 EQ (18 mil., 70 ksi).
    - c. Minimum Base-Steel Thickness: 0.0181-inch (18 mil.) unless horizontal deflection performance requires greater thickness.
      - 1) Minimum Design Thickness: 0.0190 inch.
    - d. Flange Size: 1-1/4 inches.
    - e. Web Depth: As indicated on Drawings.
    - f. Maximum Spacing: 16 inches on center.
- C. Slip-Type Head Joints: Typical at all Wall Assemblies unless indicated otherwise. Provide the following:



1. Single Long-Leg Track System: AISI S220 top track with 2-inch- deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging, at Non-Composite walls, located within 12 inches of the top of studs to provide lateral bracing.
- D. Flat Strap and Backing Plate (Strap Backing Plate): Steel sheet for blocking and bracing in length and width indicated.
1. Reinforcing for wall mounted items:
    - a. Minimum Base-Steel Thickness: 0.0428 inch (18 Ga.) unless noted otherwise.
  2. Reinforcing for wall protection, handrails, wall guards and where noted:
    - a. Minimum Base Metal Thickness: 0.0538 inch. (16 Ga.).
    - b. Width: 6 inches; provide 8 inches for low wall guard applications.
    - c. Mount at height required by details.
  3. Reinforcing for cabinets, casework and where noted:
    - a. Minimum Base Metal Thickness: 0.067 inch. (14 Ga.).
    - b. Width: 6 inches.
    - c. Mount at height required by details.
- E. Channel Bridging: Use the bridging channels that correspond with the steel stud and track system that is being used.
1. Conventional Steel Studs and Tracks – Steel U-Channel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch- wide flanges.
    - a. Depth: 1-1/2 inches.
    - b. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch- thick, galvanized steel.
  2. Embossed Steel Studs and Tracks - Pre-notched steel, 7/8 inch by 7/8 inch by 50 inches, 0.0329-inch minimum base steel thickness.
    - a. Product: Provide Clark-Dietrich Spazzer 9200 Bridging and Spacer Bar or equivalent product by other approved manufacturers.
- F. Hat-Shaped, Rigid Furring Channels: AISI S220.
1. Minimum Base-Steel Thickness: 0.0296 inch.
  2. Depth: As indicated on Drawings.
- G. Resilient Furring Channels: 1/2-inch- deep, steel sheet members designed to reduce sound transmission.
1. Configuration: Asymmetrical (single leg) or hat shaped (double leg).
    - a. Minimum Base Metal Thickness: 0.0296 inch.
  2. Embossed Resilient Furring Channels:
    - a. Minimum Base Metal Thickness: 0.0179 inch.

- b. Product: Provide Clark-Dietrich RC-1 Pro Resilient Channel – Single Leg or equivalent product by other approved manufacturers.
- H. Cold-Rolled Furring Channels: 0.053-inch uncoated-steel thickness, with minimum 1/2-inch- wide flanges.
  - 1. Depth: As indicated on Drawings.
  - 2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch.
  - 3. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.
- I. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 3/4 inch, minimum uncoated-steel thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.
- J. Radius Framing: Steel sheet track for non-load-bearing curves, bends, variable radii and arches. Framing can be made from cut track or subject to compliance with requirements from the available products.
  - 1. Minimum base-metal thickness: 0.0273 inch.
  - 2. Depth: As indicated on drawings.
- K. Pony Wall Support Framing: Partial wall framing connected to floor for cantilevered (low wall) partitions and partitions with unsupported top track. Can be installed in minimum 3-1/2 inch stud wall.
  - 1. Stud Material: Structural Grade 50 Type H, 50 ksi, 97 mil (12 gage).
  - 2. Base Plate Material: ASTM A36 1/2 inch thick hot rolled steel with predrilled anchor holes.
  - 3. Product: Clark-Dietrich Pony Wall Heavy
    - a. No. PW24 – 23-3/4 inch tall with 3-3/8 inch wide x 8 inch long base plate.
    - b. No. PW36 – 35-3/4 inch tall with 3-3/8 inch wide x 8 inch long base plate.
    - c. No. PW48 – 47-3/4 inch tall with 3-3/8 inch wide x 8 inch long base plate.
  - 4. Installation:
    - a. 36” High Wall – PW24 at 4’-0” o.c. with 4 – 1/2” dia. x 3-1/2” Embed Hilti Kwik Bolt-3 expansion anchors in base.
    - b. 42” High Wall – PW36 at 4’-0” o.c. with 4 – 1/2” dia. x 3-1/2” Embed Hilti Kwik Bolt-3 expansion anchors in base.
    - c. 86” High Wall – PW48 at 2’-8” o.c. with 4 – 1/2” dia. x 3-1/2” Embed Hilti Kwik Bolt-3 expansion anchors in base.
- L. Extruded Aluminum Partition Closure for terminating partition wall to end of curtain wall mullion.
  - 1. Product: MULLION MATE – Series 40 Plus, extruded aluminum partition closure by Gordon Interior Specialties Division, Gordon, Inc.
  - 2. System Description:
    - a. Extruded aluminum partition closures are pre-assembled, and spring loaded to provide a tight fit for vertical junctures of partitions and window walls.
    - b. Accessories: Brake formed mullion mate end cap.
    - c. Finish: Clear Anodized.

- d. Installation: Provide Batt Insulation and acoustical sealant at all material transitions as listed on manufacturer standard details.

## 2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch- diameter wire, or double strand of 0.048-inch- diameter wire.
- B. Hanger Attachments to Concrete:
  - 1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC193 or AC308 as appropriate for the substrate.
    - a. Uses: Securing hangers to structure.
    - b. Type: Torque-controlled expansion anchor, torque-controlled adhesive anchor or adhesive anchor.
    - c. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941 (ASTM F1941M), Class Fe/Zn 5, unless otherwise indicated.
    - d. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 (A1) stainless-steel bolts, ASTM F593 (ASTM F738M), and nuts, ASTM F594 (ASTM F836M).
  - 2. Power-Actuated Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.
- D. Flat Hangers: Steel sheet, 1 by 3/16 inch by length indicated.
- E. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-steel thickness of 0.0538 inch and minimum 1/2-inch- wide flanges.
  - 1. Depth: 2-1/2 inches unless indicated otherwise on Drawings.
- F. Furring Channels (Furring Members):
  - 1. Cold-Rolled Channels: 0.0538-inch uncoated-steel thickness, with minimum 1/2-inch- wide flanges, 3/4 inch deep.
  - 2. Steel Studs and Tracks: AISI S220 and ASTM C645, Section 10.
    - a. Minimum Base-Steel Thickness: 0.0296 inch.
    - b. Depth: As indicated on Drawings.
  - 3. Embossed, High-Strength Steel Studs and Tracks: AISI S220 and ASTM C645, Section 10.
    - a. Minimum Base-Steel Thickness: 0.0181 inch
    - b. Depth: As indicated on Drawings.
  - 4. Hat-Shaped, Rigid Furring Channels: AISI S220, 7/8 inch deep.
    - a. Minimum Base-Steel Thickness: 0.0296 inch.
  - 5. Resilient Furring Channels: 1/2-inch- deep members designed to reduce sound transmission.

- a. Configuration: Asymmetrical or hat shaped.
- G. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Armstrong World Industries, Inc.; Drywall Grid Systems.
    - b. Chicago Metallic Corporation; 640/660 Drywall Ceiling Suspension System.
    - c. USG Corporation; Drywall Suspension System.

## 2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
  - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.
- B. Sill Sealer Gasket at Exterior Walls: Closed-cell polyethylene foam, 3/16 to 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members as required.
  - 1. Product:
    - a. Dow Weathermate Sill Seal Foam Gasket.
    - b. Owens Corning FoamSealR Gasket.
    - c. Reflectix Inc. Pro Sill Sealer.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
  - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Install sill sealer gaskets at exterior walls to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C754, except comply with framing sizes and spacing indicated.
  - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.
- F. Framing cannot be supported by the roof decking.
  - 1. Soffit framing and any other framing that does not bear on floor structure cannot be fastened to and supported by the overhead roof deck. Framing must be supported by the structural roof framing by using non-structural metal framing, cold-formed metal-framing or steel angle or channel shapes as required.

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
  - 1. Single-Layer Application: 16 inches o.c., unless otherwise indicated.
  - 2. Multilayer Application: 16 inches o.c., unless otherwise indicated.
  - 3. Tile Backing Panels: 16 inches o.c., unless otherwise indicated.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
  - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
  - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
    - a. Install two studs at each jamb unless otherwise indicated.
    - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
    - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.

3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
  4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
- E. Direct Furring:
1. Screw to wood framing.
  2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- F. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

### 3.5 INSTALLING CEILING SUSPENSION SYSTEMS

- A. Install suspension system components according to sizes and spacings indicated on the Drawings, but not greater than spacings required by referenced installation standards for assembly types.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
    - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
  2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
    - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
  3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
  5. Do not attach hangers to steel roof deck.
  6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
  7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
  8. Do not connect or suspend steel framing from ducts, pipes, or conduit.

- D. Seismic Bracing: Sway-brace suspension systems with hangers used for support.
- E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.
  - 1. Install system per manufacturer's instructions.
  - 2. Install systems per UL rated assemblies indicated.
- F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION

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. This Section includes the following:

- 1. Interior gypsum board.
- 2. Tile backing panels.

- B. Related Requirements include the following:

- 1. Division 09 Section "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board.
- 2. Section 093013 "Ceramic Tiling" for tile backing panels, from this section, installed as substrates for ceramic tile.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Samples: For the following products:

- 1. Aluminum Trim: Full-size Sample in 12-inch- long length for each trim accessory indicated.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

- B. Do not install interior products until installation areas are enclosed and conditioned.

- C. Do not install panels that are wet, moisture damaged, or 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 E 119 by an independent testing agency.

### 2.2 GYPSUM BOARD, GENERAL

- A. Size: Provide in 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. General: ASTM C 1396/C 1396M.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. CertainTeed Corporation.
  - b. Georgia-Pacific Building Products.
  - c. National Gypsum Company.
  - d. USG Corporation.

- B. Gypsum Wallboard:

1. Regular Type: For vertical surfaces unless indicated otherwise.
  - a. Thickness: Refer to wall type schedule on drawings.
  - b. Long Edges: Tapered.
2. Type X: Where indicated or required for fire resistance rated assemblies.
  - a. Thickness: 5/8 inch.
  - b. Long Edges: Tapered.
3. Ceiling Type: Manufactured to have more sag resistance than regular-type gypsum board.
  - a. Thickness: 1/2 inch.
  - b. Long Edges: Tapered.
4. Mold-Resistant Type: With moisture- and mold-resistant core and paper surfaces.
  - a. Core: 5/8-inch, Type X.
  - b. Long Edges: Tapered.

- c. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

## 2.4 SPECIALTY GYPSUM BOARD

- A. Gypsum Board, Type C: ASTM C1396/C1396M. Manufactured to have increased fire-resistive capability.
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. CertainTeed Corporation.
    - b. Georgia-Pacific Building Products.
    - c. National Gypsum Company.
    - d. USG Corporation.
  2. Thickness: As required by fire-resistance-rated assembly indicated on Drawings.
  3. Long Edges: Tapered.

## 2.5 TILE BACKING PANELS

- A. Glass-Mat, Water-Resistant Backing Board (Glass-Matt WR Backing Board): Complying with ASTM C 1178/C 1178M, with manufacturer's standard edges.
  1. Products: Subject to compliance with requirements, provide one of the following:
    - a. CertainTeed Corporation "GlasRoc Diamondback Tile Backer".
    - b. Georgia-Pacific "DensShield Tile Backer".
    - c. National Gypsum Company "Gold Bond eXP Tile Backer.
    - d. USG Corporation "USG Durock Brand Glass-Mat Tile Backerboard."
  2. Core: 5/8-inch, Type X unless indicated otherwise.
  3. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

## 2.6 TRIM ACCESSORIES

- A. Interior Trim (Vinyl Trim): ASTM C 1047.
  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. Trim-Tex Drywall Products.
  2. Material: Rigid PVC.
    - a. Surface-Burning Characteristics: Comply with ASTM E84 for flame spread and smoke developed to achieve Class A rating.
  3. Shapes:
    - a. Cornerbead.
    - b. Expansion (control) joint, V Bead style; with tear-away bead.
    - c. L-Bead: L-shaped; with tear-away bead. Exposed long flange receives joint compound.

- B. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
  - 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. Flannery, Inc.
    - b. Fry Reglet Corp.
    - c. Gordon, Inc.
    - d. Pittcon Industries.
  - 2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221, Alloy 6063-T5.
  - 3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.
  - 4. Vent
    - a. Basis of design: Clean Finish EIFS Soffit Vent by Fry Reglet, or approved equal.
    - b. Provide vent at top and bottom of wall, maximum 4'-0" o.c. along length of wall. Refer to drawings for wall locations requiring venting.
  - 5. Ceiling edge trim.
    - a. Basis of design: Drywall Ceiling Edge Adapter (DCT 625) by Flannery, Inc.
    - b. Finish: Standard mill for field painting.

## 2.7 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C 475/C 475M.
- B. Joint Tape:
  - 1. Interior Gypsum Board: Paper.
  - 2. Tile Backing Panels: As recommended by panel manufacturer.
- 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, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
  - 2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
  - 3. Fill Coat: For second coat, use setting-type, sandable topping or drying-type, all-purpose compound.
  - 4. Finish Coat: For third coat, use setting-type, sandable topping or drying-type, all-purpose compound.
    - a. High-build interior coating product designed for application by airless sprayer may be used instead of skim coat to produce Level 5 finish.
- D. Joint Compound for Tile Backing Panels:
  - 1. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.

2. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
3. Cementitious Backer Units: As recommended by backer unit manufacturer.

## 2.8 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.
- B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
- C. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
  1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- D. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation."
- E. Vapor Retarder: As specified in Division 07 Section "Thermal Insulation."

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, including welded hollow-metal frames and support framing, 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 APPLYING AND FINISHING PANELS, GENERAL

- A. Comply with ASTM C 840.
- 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. Install panels off of base floor substrate. Provide 1/8 inch to 1/4-inch-high maximum space at floor.
- E. 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.

- F. Form control and expansion joints with space between edges of adjoining gypsum panels. Each board should be supported by separate framing members.
  - 1. Install control joints in accordance with the manufacturer's recommendations and where shown on the drawings, in addition to the following:
    - a. Locate joints at points of maximum stress and/or at points of natural weak planes, such as at openings, juncture of dissimilar materials, and at re-entrant corners.
    - b. Locate joints in interior walls directly over building control and expansion joints.
    - c. Install control joints where partition abuts structural elements and dissimilar construction.
    - d. Locate joints in ceilings with undivided panel and where wings of "L", "U", and "T" shaped areas are joined. See "Installing Trim Accessories" in Part 3 of this section.
    - e. Locate joints in interior partitions and walls without openings. Do not exceed maximum spacing between joints as indicated in "Installing Trim Accessories" in Part 3 of this section.
- G. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
  - 1. Fit gypsum panels around ducts, pipes, and conduits and install required sealant.
  - 2. 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.
- H. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. 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.
- I. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
  - 1. Space screws a maximum of 12 inches o.c. vertically, typical.
  - 2. Space screws at tile backing boards a maximum of 8" o.c. vertically.

### 3.3 APPLYING INTERIOR GYPSUM BOARD

- A. 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-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.

B. 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 1 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. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
4. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

C. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 APPLYING TILE BACKING PANELS

- A. Water-Resistant Gypsum Backing Board: Install where indicated, this includes all dry areas to receive tile where another substrate has not been indicated. Install with 1/4-inch gap where panels abut other construction or penetrations.
- B. Glass-Mat, Water-Resistant Backing Panel: Comply with manufacturer's written installation instructions and install where indicated. Install with 1/4-inch gap where panels abut other construction or penetrations.
- C. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

3.5 INSTALLING 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 C 840 , at locations indicated on Drawings and in specific locations approved by Architect for visual effect. All required locations will not be shown on the drawings. See the following for additional required locations.
  1. The following conditions or locations are a list of, but not inclusive of all, control joint locations:
    - a. Wall or partition that is an uninterrupted straight plane exceeding 30 feet.
    - b. Where a wall or ceiling traverses a construction joint (expansion, seismic or building control element) in the base buildings structure.
    - c. Interior ceilings with perimeter relief at 50 feet intervals with areas between not exceeding 2,500 square feet.

- d. Interior ceilings without perimeter relief at 30 feet intervals with areas between not exceeding 900 square feet.
- C. Interior Trim: Install in the following locations:
  - 1. Cornerbead: Use at outside corners.
  - 2. L-Bead: Use where edge trim can only be installed after panels are installed.
  - 3. Curved-Edge Cornerbead: Use at curved openings.
- D. Aluminum Trim: Install in locations indicated on Drawings.

### 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.
  - 1. Existing gypsum board surfaces where wall coverings have been removed are to be clean and free of remaining paste or adhesives and finished to Level 4.
- 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 C 840:
  - 1. Level 1: Ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound rated assemblies.
  - 2. Level 2: Panels that are substrate for tile.
  - 3. Level 3: Where indicated on Drawings.
  - 4. Level 4: At panel surfaces that will be exposed to view, unless otherwise indicated.
    - a. Primer and its application to surfaces are specified in Division 09 "Interior Painting".
- E. For Level 1 gypsum board, embed tape in joint compound. Tape and fastener heads need not be covered with joint compound.
- F. For Level 2 gypsum board, embed tape in joint compound and cover tape, trim and fasteners with one coat of joint compound. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.
- G. For Level 4 gypsum board, perform level 2 work and then apply two separate coats of joint compound on all joints, trim and fastener. Sand between all coats and after last coat. Surface shall be smooth and free of all visual defects.
- H. Water-Resistant Gypsum Backing Board: Finish according to manufacturer's written instructions.
- I. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.

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, or 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.

END OF SECTION



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. Waterproof membrane for thinset applications.
3. Crack isolation membrane.
4. Metal edge strips.

- B. Related Requirements:

1. Section 024119 "Selective Structure Demolition" for removing existing floor coverings.
2. Section 091001 "Floor Preparation" for hydraulic cement based self-leveling, trowelable and fill underlayments and substrate preparation and condition requirements.
3. Section 092900 "Gypsum Board" for tile backing panels.
4. Section 079200 "Joint Sealants" for sealing of expansion, contraction, control, and isolation joints in tile surfaces.

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. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

2. Review all scheduled systems and in particular, verify locations and extent of systems with the following:
  - a. Waterproof Membranes or Crack Isolation Membranes.
  - b. Surfaces that are sloped to drains.
  - c. Large Format Tiles and required setting materials.
  - d. Tile backer board types.
3. Review types and locations of sealant filled joints.

#### 1.5 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. Metal edge strips in 6-inch lengths.

#### 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.

#### 1.7 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.

#### 1.8 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. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. 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 waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
  - 1. Metal edge strips.

2.2 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
  - 1. Provide tile complying with Standard grade requirements unless otherwise 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. Ceramic Tile Type CT-1: Unglazed porcelain floor tile.
  - 1. Certification: Tile certified by the Porcelain Tile Certification Agency.
  - 2. Nominal Size: 12 by 24 inches.
  - 3. Face Size Variation: Non-Rectified.
  - 4. Thickness: 3/8 inch.
  - 5. Face: Plain with square or cushion edges.
  - 6. Dynamic Coefficient of Friction: Not less than 0.42.
  - 7. Tile Color, Glaze and Pattern: As indicated by manufacturer's designations on the Drawings.

8. Grout Color: As indicated by manufacturer's designations on the Drawings.
9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable. Provide shapes as follows, selected from manufacturer's standard shapes:

- a. Cove Base: Module size 6 by 12 inches.

B. Ceramic Tile Type CT-2: Unglazed porcelain wall tile.

1. Certification: Tile certified by the Porcelain Tile Certification Agency.
2. Nominal Size: 12 by 24 inches.
3. Face Size Variation: Non-Rectified.
4. Thickness: 3/8 inch.
5. Face: Plain with square or cushion edges.
6. Dynamic Coefficient of Friction: Not less than 0.42.
7. Tile Color, Glaze and Pattern: As indicated by manufacturer's designations on the Drawings.
8. Grout Color: As indicated by manufacturer's designations on the Drawings.
9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable.

#### 2.4 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. Waterproof Membrane, Fabric-Reinforced, Fluid-Applied: System consisting of liquid-latex rubber or elastomeric polymer and continuous fabric reinforcement.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Bostik, Inc.; Black-Top.
- b. Custom Building Products; Custom 9240 Waterproofing & Anti-Fracture Membrane.
- c. Laticrete International, Inc.; Laticrete 9235 Waterproofing Membrane.
- d. MAPEI Corporation; Mapelastic AquaDefense with MAPEI Fiberglass Mesh or Mapeband cove roll.
- e. TEC, H. B. Fuller Construction Products, Inc., HydraFlex Waterproofing Crack Isolation and Membrane 316.

#### 2.5 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product, selected from the following that complies with ANSI A118.12 for standard performance [high performance] and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Crack Isolation Membrane, Fabric-Reinforced, Fluid-Applied: System consisting of liquid-latex rubber or elastomeric polymer and fabric reinforcement.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. Bostik, Inc.; Bostik Blacktop.
- b. Custom Building Products; Fracture Free Crack Prevention Membrane.
- c. Laticrete International, Inc.; Blue 92 Anti-Fracture Membrane.

- d. MAPEI Corporation; Mapelastic CI with MAPEI Fiberglass Mesh or Mapeband cover roll.
- e. TEC, H. B. Fuller Construction Products, Inc., HydraFlex Waterproofing Crack Isolation and Membrane 316.

## 2.6 SETTING MATERIALS

- A. Large and Heavy Tile, Modified Dry-Set Mortar (Medium-Bed): Comply with requirements in ANSI A118.4. Provide product that is approved by manufacturer for application thickness of up to 5/8 inch.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Bostik, Inc., Big Tile & Stone
    - b. Custom Building Products, VersaBond LFT Professional Large Format Tile Mortar.
    - c. Laticrete International Inc., 4 XLT.
    - d. MAPEI Corporation, Kerabond T/Keralastic or Keraflex Super.
    - e. TEC, H. B. Fuller Construction Products, Inc., Ultimate 6 Plus Mortar.
  - 2. Provide either of the following:
    - a. Prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site
    - b. Prepackaged, dry-mortar mix combined with acrylic resin or styrene-butadiene-rubber liquid-latex additive at Project site.

## 2.7 GROUT MATERIALS

- A. Standard Cement Grout: ANSI A118.6.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Bostik, Inc., Hydromet Dry Tile Grout (unsanded) and Hydromet Ceramic Tile Grout (sanded).
    - b. Custom Building Products, Polyblend Plus Sanded and Unsanded Grout.
    - c. Laticrete International, Inc., Laticrete 1600 Unsanded and Laticrete 1500 sanded
    - d. MAPEI Corporation, Keracolor U (unsanded) and Keracolor S (sanded).
    - e. TEC, H. B. Fuller Construction Products, Inc., AccuColor Premium Unsanded Grout 620 and Sanded Grout 650.
  - 2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.
    - a. Unsanded grout mixture for joints 1/8-inch and narrower.
    - b. Sanded grout mixture for joints 1/8-inch and wider.
    - c. Use grout admixture in place of water.
- B. Water-Cleanable Epoxy Grout: ANSI A118.3.
  - 1. Basis-of-Design Product: Subject to compliance with requirements, provide one of the following:
    - a. Bostik, Inc. EzPoxy EzClean.
    - b. Custom Building Products, CEG Lite Epoxy Grout.

- c. Laticrete International, Inc., Spectra LOCK Pro Grout.
  - d. MAPEI Corporation, Kerapoxy 100% Solids Epoxy Mortar and Grout.
  - e. TEC, H. B. Fuller Construction Products, Inc., AccuColor EFX Epoxy Special Effects Grout.
2. Provide product capable of withstanding continuous and intermittent exposure to temperatures of up to 140 and 212 deg F respectively and certified by manufacturer for intended use.

## 2.8 MISCELLANEOUS MATERIAL

- A. Self-Leveling and Trowelable Underlayments, and Patching Compounds: See Section 091001 "Floor Preparation" for hydraulic cement based self-leveling, trowelable and fill underlayments, and substrate preparation and condition requirements.
- B. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic designed specifically for flooring applications; stainless-steel, ASTM A666, brushed, 300 Series exposed-edge material unless noted otherwise.
  1. Basis-of-Design Products: Subject to compliance with requirements, provide products by Schluter Systems L.P. or comparable product by one of the following:
    - a. Blanke Corporation.
    - b. Ceramic Tool Company, Inc.
  2. Products: Subject to compliance with requirements, provide products by Schluter Systems L.P.
    - a. New resilient tile to carpet: SCHIENE No. E45.
    - b. New tile to resilient tile and carpet: SCHIENE No. E100EB.
- C. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.
  1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.
  2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- 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. Tile Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.
  1. Products: Subject to compliance with requirements, provide one of the following available products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Bostik, Inc.; CeramaSeal Grout & Tile Sealer.
    - b. Custom Building Products, Aqua Mix Sealer's Choice Gold.
    - c. Laticrete International, Inc, Stonetech Quartz and Porcelain Tile Sealer.
    - d. MAPEI Corporation; KER 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.

2.9 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. Remove coatings, including curing compounds or other coatings, that are incompatible with tile-setting materials.
- B. 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.
- C. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- D. 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.

- E. Substrate Flatness:
  - 1. For tile shorter than 15 inches, confirm that structure or substrate is limited to variation of 1/4 inch in 10 ft. From the required plane, and no more than 1/16 inch in 12 inches when measured from tile surface high points.
  - 2. For large format tile, tile with at least one edge 15 inches or longer, confirm that structure or substrate is limited to 1/8 inch in 10 ft. from the required plane, and no more than 1/16 inch in 24 inches when measured from tile surface high points.
- F. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

### 3.3 CERAMIC TILE INSTALLATION

- 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. Porcelain Tile: 3/16 inch.



- H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.
  - I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, indicated below. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.
    - 1. Slab on Grade Concrete; all movement joints (sawcuts and others) must be continued up through the tile installation. Sealant-filled joints with backer rod are to be installed.
      - a. Sealant-filled joints are to be placed at a maximum of 25' in each direction at interior slab on grade tile installations if there are not any sawcuts or other movement joints.
    - 2. Suspended Concrete Slabs (concrete on metal deck); There must be sealant-filled joints with backer rod spaced no more than 12 feet apart both directions.
      - a. Where joints occur in suspended concrete slab substrates, locate joints in tile surfaces directly above them.
    - 3. Any type of interior concrete slab that is exposed to sunlight will have sealant-filled joints with backer rod spaced no more than 12 feet apart both directions.
    - 4. Sealant-filled perimeter joints are to be installed where tile installation abuts restraining surfaces such as perimeter walls, dissimilar floor finishes, columns, pipes and where changes occur in substrate materials.
    - 5. Sealant-filled joints are to be placed at changes in plane, interior movement joints at all inside corners.
    - 6. Joint Width - Interiors:
      - a. Perimeter joints at walls, not less than ¼". Can be covered by tile trim, cove base or shoe molding.
      - b. Perimeter joints other than walls 1/8" to 1/4".
      - c. Change of plane, same as grout joint but not less than 1/8".
  - 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 TILE BACKING PANEL INSTALLATION
- A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated.
    - 1. See Section 092900 "Gypsum Board".
- 3.5 WATERPROOFING INSTALLATION
- A. Install waterproofing 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 waterproofing to cure and verify by testing that it is watertight before installing tile or setting materials over it.

### 3.6 CRACK ISOLATION MEMBRANE INSTALLATION

- 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 F122A; thinset mortar on waterproof membrane. Provide this system at all Upper Level Rooms indicated to have Ceramic Floor Tile.
    - a. Ceramic Tile Type: CT-1.
    - b. Thinset Mortar: Large and Heavy Tile (Medium-bed), modified dry-set mortar.
    - c. Grout: Standard sanded cement grout.
  - 2. Ceramic Tile Installation: TCNA F125-Full; thinset mortar on crack isolation membrane. Provide this system at all Lower Level Rooms indicated to have Ceramic Floor Tile.
    - a. Ceramic Tile Type: CT-1.

- b. Thinset Mortar: Large and Heavy Tile (Medium-bed), modified dry-set mortar.
  - c. Grout: Standard sanded cement grout.
- B. Interior Wall Installations, Wood or Metal Studs or Furring:
- 1. Ceramic Tile Installation: TCNA W245 or TCNA W248; thinset mortar on glass-mat, water-resistant gypsum backer board.
    - a. Ceramic Tile Type: CT-2.
    - b. Thinset Mortar: Large and Heavy Tile (Medium-bed), mortar.
    - c. Grout: Standard sanded cement grout.
- C. Wall Installation at Bathtub: Staff Restroom 137.
- 1. Ceramic Tile Installation: TCNA B420; thinset mortar on waterproof membrane over glass-mat, water-resistant gypsum backer board.
    - a. Ceramic Tile Type: CT-2.
    - b. Thinset Mortar: Large and Heavy Tile (Medium-bed) mortar.
    - c. Grout: Water-cleanable epoxy grout.

END OF SECTION

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 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 SUBMITTALS

- A. Product Data: For each type of product.
- B. Maintenance Data: For finishes to include in maintenance manuals.

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. Acoustical Ceiling Units: Full-size panels equal to 5 percent of quantity installed.
  - 2. Suspension-System Components: Quantity of each exposed component equal to 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.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

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. Seismic Performance: Suspended ceilings shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. 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.
- C. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 1. Indicate design designations from UL or from the listings of another qualified testing agency.

2.3 ACOUSTICAL PANELS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products by Armstrong World Industries, Inc. or a comparable product by one of the following:
  - 1. CertainTeed Corporation.
  - 2. United States Gypsum Company.
- 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. Acoustical Panel Type APC-1.
  - 1. Product, Armstrong Fine Fissured Second Look, No. 1761.
  - 2. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:

- a. Type and Form: Type A; Form A1.2, with manufacturer's acoustically transparent membrane and factory applied latex paint.
  - b. Pattern: D (lightly textured).
3. Color: White.
  4. LR: Not less than 0.82.
  5. NRC: Not less than 0.55.
  6. CAC: Not less than 35.
  7. Edge/Joint Detail: Beveled Tegral Reveal sized to fit flange of exposed suspension system members.
  8. Thickness: 3/4 inch.
  9. Modular Size: 24 by 48 inches.
  10. Antimicrobial Treatment: Manufacturer's standard which resists the growth of mold, mildew and bacteria.
  11. Suspension System: Type MSS-1.

D. Acoustical Panel Type APC-2.

1. Product, Armstrong Fine Fissured, No. 1732.
2. Classification: Provide panels complying with ASTM E 1264 for type, form, and pattern as follows:
  - a. Type and Form: Type A; Form A1.2, with manufacturer's acoustically transparent membrane and factory applied latex paint.
  - b. Pattern: D (lightly textured).
3. Color: To be selected from manufacturer's full range
4. LR: Not less than 0.82.
5. NRC: Not less than 0.55.
6. CAC: Not less than 35.
7. Edge/Joint Detail: Beveled Tegral Reveal sized to fit flange of exposed suspension system members.
8. Thickness: 5/8 inch.
9. Modular Size: 24 by 24 inches.
10. Antimicrobial Treatment: Manufacturer's standard which resists the growth of mold, mildew and bacteria.
11. Suspension System: Type MSS-1.

- E. 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. Basis-of-Design Product: Subject to compliance with requirements, provide products by Armstrong World Industries, Inc. or a comparable product by one of the following:
1. CertainTeed Corporation.
  2. Chicago Metallic by Rockfon.
  3. United States Gypsum Company.

- 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. Metal Suspension System, Type MSS-1.
  - 1. Product: Armstrong Prelude XL 15/16 inch.
  - 2. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet, hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation, with prefinished 15/16-inch- wide metal caps on flanges.
    - a. Structural Classification: Intermediate or Heavy-duty system.
    - b. End Condition of Cross Runners: Butt-edge type.
    - c. Face Design: Flat, flush.
    - d. Cap Material: Steel cold-rolled sheet.
    - e. 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.
  - 1. 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 hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E1190, conducted by a qualified testing and inspecting agency.
- 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 0.106-inch- diameter wire.

## 2.6 ACOUSTICAL SEALANT

- A. Acoustical Sealant: As specified in Section 079200 "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 seismic design requirements, and manufacturer's written instructions.
- 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 power-actuated fasteners that extend through forms into concrete.
  - 7. 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.
  - 8. Do not attach hangers to steel deck tabs.
  - 9. Do not attach hangers to steel roof deck. Attach hangers to structural members. Provide supplemental framing as required if structural members are spaced too far apart.
  - 10. 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.
  - 11. 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 postinstalled 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. Install at locations indicated.
    - a. See drawings for locations.
  - 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 patterned 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 ERECTION TOLERANCES

- A. Suspended Ceilings: Install main and cross runners level to a tolerance of 1/8 inch in 12 feet non-cumulative.
- B. Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 1/8 inch in 12 feet, non-cumulative.

### 3.5 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

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.
  - 2. Rubber stair accessories.
  - 3. Vinyl molding accessories.

1.3 SUBMITTALS

- A. Product Data: For each type of product.
- B. Product Schedule: For resilient base and accessory products. Use same designations indicated on Drawings.

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. 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 (10 deg C) or more than 90 deg F (32 deg C).

1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than [70 deg F (21 deg C) or more than [95 deg F (35 deg C) in spaces to receive resilient products 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 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
- C. Install resilient products after other finishing operations, including painting, have been completed.

## PART 2 - PRODUCTS

### 2.1 THERMOPLASTIC RUBBER BASE - RB-X

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers listed on the drawings.
- B. Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).
  1. Group: I (solid, homogeneous).
  2. Style and Location:
    - a. Style A, Straight: Provide in areas with carpet.
    - b. Style B, Cove: Provide in areas with resilient floor coverings.
- C. Thickness: 0.125 inch.
- D. Height: 4 inches unless indicated otherwise on Drawings.
  1. Provide 6 inches at all Toilet Rooms.
- E. Lengths: Coils in manufacturer's standard length.
- F. Outside Corners: Job formed.
- G. Inside Corners: Job formed.
- H. Colors: As indicated by manufacturer's designations on Drawings.

### 2.2 RUBBER STAIR ACCESSORIES

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E648 or NFPA 253 by a qualified testing agency.
  1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.
- B. Resilient Stair Treads:
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers listed on the drawings.
- C. Rubber Stair Treads: ASTM F2169.
  1. Type: TS (rubber, vulcanized thermoset).

2. Class: 2 (pattern; embossed).
3. Group: 1 (embedded abrasive strips).
4. Nosing Style: Square, adjustable to cover angles between 60 and 90 degrees.
5. Nosing Height: 2 inches.
6. Thickness: 1/4 inch and tapered to back edge.
7. Size: Lengths and depths to fit each stair tread in one piece.
8. Integral Risers: Smooth, flat; in height that fully covers substrate.

D. Stringers: Height and length after cutting to fit risers and treads and to cover stair stringers, produced by same manufacturer as treads, and recommended by manufacturer for installation with treads.

1. Thickness: Manufacturer's standard.

E. Locations: Provide rubber stair accessories in areas indicated

F. Colors and Patterns: As indicated by manufacturer's designations.

### 2.3 VINYL MOLDING ACCESSORIES

A. Basis of Design: Subject to compliance with requirements provide products by Tarkett or comparable products by:

1. Musson Rubber Co.
2. Roppe Corporation, USA.

B. Description: Vinyl reducers, joiners and transition strips.

1. Resilient Flooring to Concrete: Tarkett SSR-XX-B.
  - a. Profile and Dimensions: 1 5/8 inch overall for 1/8 inch to floor transition.

### 2.4 INSTALLATION MATERIALS

A. Self-Leveling Underlayments, Trowelable Underlayments and Patching Compounds: Polymer-modified, portland cement based or blended hydraulic-cement-based formulation as specified in Section 091001 "Floor Preparation".

B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.

C. Stair-Tread Nose Filler: Two-part epoxy compound recommended by resilient stair-tread manufacturer to fill nosing substrates that do not conform to tread contours.

D. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient stair-tread manufacturer.

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. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
  - 4. 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 75 percent relative humidity level measurement.
  - 5. Absorption (Porosity) Testing: Concrete substrates are to be tested to establish the substrates water absorption (porosity). This assessment will allow the determination of appropriate surface preparation and which of the manufacturer's primers are to be utilized.
    - a. Test for porosity per ASTM F3191.
    - b. Extremely absorbent concrete may require two applications of primer per manufacturer's instructions.
    - c. Concrete treated with admixture may be non-porous. Provide manufacturer's recommended primer.
  - 6. Adhesion Tests: After substrate preparation, test substrate for adhesion with resilient stair accessories according to manufacturer's written instructions.

- 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. 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.
- E. 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. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- G. Job-Formed Corners:
  - 1. Outside Corners: Use straight pieces of maximum lengths possible.
    - a. Form without producing discoloration (whitening) at bends.
    - b. Shave back of base at points where bends occur and remove strips perpendicular to length of base that are only deep enough to produce a snug fit without removing more than half the wall base thickness.
  - 2. Inside Corners: Use straight pieces of maximum lengths possible.
    - a. Form by cutting an inverted V-shaped notch in toe of wall base at the point where corner is formed. Shave back of base where necessary to produce a snug fit to substrate.

### 3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:
  - 1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
  - 2. Tightly adhere to substrates throughout length of each piece.

- C. 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. Floor Polish: Remove soil, adhesive, and blemishes from resilient stair treads before applying liquid floor polish.
  - 1. Apply two coats.
- E. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION

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 tile.
2. Rubber floor tile.
3. Vinyl composition floor tile.

B. Related Sections:

1. Division 02 Section "Selective Structure Demolition" for removing existing floor coverings.
2. Division 09 Section "Floor Preparation" for concrete testing, substrate preparation, condition requirements and installation of trowelable underlayment at all locations to receive resilient tile flooring.
3. Division 09 Section "Resilient Base and Accessories" for resilient base, reducer strips, and other accessories installed with resilient floor coverings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Coordinate this section's work with Section 091001 "Floor Preparation" work.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.

1. Show details of special patterns.

C. Product Schedule: For floor tile. Use same designations indicated on Drawings.

D. Maintenance Data: For each type of floor tile to include in maintenance manuals.



1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
  - 1. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required.

1.6 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 60 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.7 FIELD CONDITIONS

- A. Maintain ambient temperatures and relative humidity within ranges recommended by manufacturer. Temperatures are to not be less than 70 deg F or more than 85 deg F and relative humidity between 30% and 55% in spaces to receive floor tile during the following time periods:
  - 1. 48 hours before installation.
  - 2. During installation.
  - 3. 48 hours after installation.
- B. Until Substantial Completion, maintain ambient temperatures and relative humidity within ranges recommended by manufacturer. Temperatures are to not be less than 65 deg F or more than 85 deg F and relative humidity between 30% and 55%.
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

1.8 MAINTENANCE MATERIALS 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. Floor Tile: Furnish 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
  - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 LUXURY VINYL FLOOR TILE

- A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers listed on the drawings.
- B. Luxury Vinyl Floor Tile LVT-X
  - 1. Product: See drawings.
  - 2. Tile Standard: ASTM F 1700.
    - a. Class: Class III, printed film vinyl tile.
    - b. Type: B, embossed surface.
  - 3. Total Thickness: Not less than 4 mm.
  - 4. Wear Layer Thickness: Not less than 20 mil.
  - 5. Size: See Drawings.
  - 6. Colors and Patterns: See Drawings.

2.3 RUBBER FLOOR TILE

- A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers listed on the drawings.
- B. Rubber Floor Tile Type RT-1 and RT-2
  - 1. Product: See drawings.
  - 2. Tile Standard:
    - a. RT-1: ASTM F 1344, Class I-A, homogeneous rubber tile and solid color Class I-B, homogeneous rubber tile, through mottled.
    - b. RT-2: ASTM F 1344, solid color Class I-B, homogeneous rubber tile, through mottled.
  - 3. Hardness: Grade 1, minimum hardness of 85 as required by ASTM F 1344, measured using Shore, Type A durometer per ASTM D 2240.
  - 4. Wearing Surface:
    - a. RT-1: Textured.
    - b. RT-2: Hammered.
- C. Thickness: 0.125 inch.
- D. Size: See Drawings.
- E. Colors and Patterns: See Drawings.

2.4 VINYL COMPOSITION FLOOR TILE

- A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers listed on the drawings.

- B. Vinyl Composition Floor Tile VCT-1
  - 1. Product: See drawings.
  - 2. Tile Standard: ASTM F 1066, Class 1, solid-color tile.
  - 3. Wearing Surface: Smooth.
  - 4. Thickness: 0.125 inch.
  - 5. Static Load Limit: ASTM F 970, 150 psi.
  - 6. Size: 12 by 12 inches.
  - 7. Colors and Patterns: See Drawings.

## 2.5 INSTALLATION MATERIALS

- A. Trowelable Underlayments: Polymer-modified, portland cement based or blended hydraulic-cement-based formulation as specified in Section 091001 "Floor Preparation".
- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturer to suit floor tile and substrate conditions indicated.
  - 1. Refer to Section 091001 "Floor Preparation" for Alkalinity, Moisture and Absorption (Porosity) Testing. Assessment of test results is to determine flooring and adhesive manufacturers recommended adhesive.
- C. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer.

## 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.
- B. 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 floor tile.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Verify substrates have been prepared according to manufacturer's written instructions to ensure adhesion of resilient products. Where flooring manufacturers instruction conflict with the floor preparation requirements listed, the most stringent requirements shall apply.
- B. Concrete Substrates: Concrete substrates are to be prepared, cleaned and tested per 091001 Floor Preparation.
  - 1. Entire floor substrate is to have trowelable underlayment applied to produce a uniform and smooth substrate.
  - 2. At all adjacent finish surfaces that are higher than the resilient flooring surface, such as ceramic tile, trowelable underlayment is to be placed thicker so the resilient floor surface matches in height.

- a. The underlayment is to be feathered down, away from the adjacent finish material to the required height/thickness, over a distance of 36 inches.
- C. Resilient Tile Flooring Adhesion Bond Testing: After substrate preparation and underlayment application, test flooring for adhesion to substrate according to manufacturer's written instructions and the following:
  - 1. Bond test must be performed using the actual flooring and adhesive to be installed. Evaluate for bond strength to substrate to verify manufacturers requirements are met.
- D. Do not install floor tiles until they are same temperature as space where they are to be installed.
  - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation.

### 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 unless noted or shown otherwise.
- 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 unless noted or shown otherwise.
- 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.
  - 1. Provide sealant at juncture of all door frames and flooring. Sealant to match door frame color.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. 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, nonstaining marking device.
- G. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- H. Adhere floor tiles to flooring 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.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
  - 1. Remove adhesive and other blemishes from exposed surfaces.
  - 2. Sweep and vacuum surfaces thoroughly.
  - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish.
  - 1. Apply two coats.
- E. Cover floor tile until Substantial Completion.

END OF SECTION

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. This Section includes:

- 1. Modular carpet tile.

- B. Related Sections include the following:

- 1. Division 02 Section "Selective Structure Demolition" for removing existing floor coverings.
- 2. Division 09 Section "Floor Preparation" for concrete testing, substrate preparation, condition requirements and installation of trowelable underlayments at all locations to receive tile carpeting.
- 3. Division 09 Section "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.

1.3 PREINSTALLATION MEETING

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.4 SUBMITTALS

- A. Product Data: For each type of product:

- 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
- 2. Include installation recommendations for each type of substrate.

- B. Shop Drawings: Show the following:

- 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet tiles.
- 2. Existing flooring materials to be removed.
- 3. Carpet tile type, color, and dye lot.
- 4. Type of subfloor.
- 5. Pattern type, location, and direction.
- 6. Transition details to other flooring materials.

- C. Samples: 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.
- D. Product Schedule: For carpet tile. Use same designations indicated on Drawings.
- E. 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.
- F. Sample Warranty: For special warranty specified in this Section.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.
- B. Fire-Test-Response Characteristics: Provide products with the critical radiant flux classification indicated in Part 2, as determined by testing identical products per ASTM E 648 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Carpet and Rug Institute's CRI 104, Section 4.0, "Storage and Handling."

#### 1.7 FIELD CONDITIONS

- A. Comply with Carpet and Rug Institute's CRI 104, Section 7.0, "Site Conditions" for temperature, humidity and ventilation limitations.
- B. Environmental Limitations: Do not 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 the levels indicated for Project when occupied for its intended use.
- 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.

#### 1.8 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer's standard form in which 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, runs,
  - b. Dimensional stability.
  - c. Excess static discharge.
  - d. Loss of tuft-bind strength.
  - e. Loss of face fiber.
  - f. Delamination.
3. Warranty Period: 10 years from date of Substantial Completion.

#### 1.9 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below, before installation begins, 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.

### PART 2 - PRODUCTS

#### 2.1 CARPET TILE

- A. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers listed on the drawings.
- B. Carpet Tile CPT-1, CPT-2, CPT-3 and CWOT-1:
  1. Manufacturer/Product Name: See drawings.
  2. Color and Pattern: See drawings.
  3. Fiber Content: 100 percent nylon 6, 6.
  4. Dye Method: Solution Dyed.
  5. Pile Characteristic: Textured patterned loop.
  6. Primary Backing/Backcoating: Manufacturer's standard composite materials.
  7. Secondary Backing: Infinity 2 Modular.
  8. Size: See Drawings.
  9. Applied Soil-Resistance Treatment: Manufacturer's standard treatment.
  10. Performance Characteristics: As follows:
    - a. Critical Radiant Flux Classification: Not less than 0.45 W/sq. cm (Class I) per ASTM E648.
    - b. Delamination: Not less than 3.5 lbf/in. per ASTM D 3936.
    - c. Dimensional Stability: 0.2 percent or less per ISO 2551 (Aachen Test).
    - d. Colorfastness to Crocking: Not less than 4, wet and dry, per AATCC 165.
    - e. Electrostatic Propensity: Less than 3 kV per AATCC 134.



2.2 INSTALLATION ACCESSORIES

- A. Trowelable Underlayments: See Section 091001 Floor Preparation for Trowelable Underlayment products to be used for substrate preparation.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
  - 1. Refer to Section 091001 "Floor Preparation" for Alkalinity, Moisture and Absorption (Porosity) Testing. Assessment of test results is to determine flooring and adhesive manufactures recommended adhesive.

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.
- B. 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 floor coverings.
- C. Examine carpet tile for type, color, pattern, and potential defects.

3.2 PREPARATION

- A. General: Comply with Carpet and Rug Institute's CRI 104, Section 8.0, "Substrate Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Concrete Substrates: Concrete substrates are to be prepared, cleaned and tested per 091001 Floor Preparation.
  - 1. Entire floor substrate is to have trowelable underlayment applied to produce a uniform and smooth substrate.
- C. Tile Carpet Adhesion Bond Testing: After substrate preparation and underlayment application, test flooring for adhesion to substrate according to manufacturer's written instructions and the following:
  - 1. Bond test must be performed using the actual flooring and adhesive to be installed. Evaluate for bond strength to substrate to verify manufacturers requirements are met.
- D. Painted Subfloors: Painted substrates are to be prepared, cleaned and tested per 091001 Floor Preparation.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with Carpet and Rug Institute's CRI 104, Section 10, "Carpet Tile Installation," 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. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. 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, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
  - 2. Remove yarns that protrude from carpet tile surface.
  - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with Carpet and Rug Institute's CRI 104, Section 13.7, "Post Installation."
- 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

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. This Section includes surface preparation and the application of paint systems on the following exterior substrates:

1. Concrete and Asphalt.
2. Vertical and overhead concrete.
3. Steel.
4. Galvanized and galvanized metal.
5. Aluminum (not anodized or otherwise coated).
6. Exterior gypsum board.

- B. This Section includes surface preparation and the applications of wood finishes on the following exterior substrates:

1. Exposed dimension lumber (rough carpentry).
2. Dressed lumber (finish carpentry).
3. Exposed wood panel products.

- C. Related Sections include the following:

1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.
2. Division 09 Section "Interior Painting" for surface preparation and the application of paint systems on interior substrates.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Samples for Verification: For each type of paint system and each color and gloss of topcoat indicated.

1. Submit Samples on rigid backing, 8 inches square.
2. Step coats on Samples 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 List: For each 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.

#### 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 PROJECT 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.

#### 1.6 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
  1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Basis of Design: Subject to compliance with requirements provide products by the Sherwin Williams Company or comparable products by the following:
  1. Benjamin Moore & Co.
  2. Pratt and Lambert.

#### 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 the Drawings.

2.3 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 1. Concrete: 12 percent.
  - 2. Masonry (Clay and CMU): 12 percent.
  - 3. Wood: 15 percent.
  - 4. Plaster: 12 percent.
  - 5. Gypsum Board: 12 percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. 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.

2.4 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 plates, machined surfaces, and similar items already in place that 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.
  - 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
  - 1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Clay Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content of surfaces or alkalinity of mortar joints to be painted exceed that permitted in manufacturer's written instructions.
- F. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.

- G. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
- H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- I. Aluminum Substrates: Remove surface oxidation.
- J. Wood Substrates (Paint):
  - 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.
- K. Wood Substrates (Staining and Transparent Finishes):
  - 1. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each particular substrate condition and as specified.
    - a. Remove surface dirt, oil, or 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.
    - b. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.
    - c. Countersink steel nails, if used, and fill with putty tinted to final color to eliminate rust leach stains.
  - 2. Apply wood filler paste to open-grain woods, as defined in "MPI Architectural Painting Specification Manual," to produce smooth, glasslike finish.
- L. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.
- M. Plaster Substrates: Do not begin paint application until plaster is fully cured and dry.
- N. Exterior Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.
- O. Asphalt Pavement Substrates: Asphalt must be cured to extent permitted by the manufacturer.

## 2.5 APPLICATION

- A. Apply paints according to 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.
- 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.

## 2.6 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:
  - 1. Owner may engage the services of a qualified testing agency to sample paint materials 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 paint materials with product requirements.
  - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

## 2.7 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.

## 2.8 EXTERIOR PAINTING SCHEDULE

- A. Concrete and Asphalt Substrates (Markings on Traffic Surfaces):
  - 1. Latex System:
    - a. One coat Setfast Acrylic Waterborne Traffic Marking flat 15 mils WFT/7 mils DFT.
- B. Vertical and Overhead Concrete Substrates:
  - 1. Water Based Stain – Solid Color System (Existing Substrates) :
    - a. Prime Coat: H&C Colortop Water Based Solid Color Concrete Stain 100-150 sq/ft per gallon.
    - b. Topcoats: H&C Colortop Water Based Solid Color Concrete Stain 100-150 sq/ft per gallon.

- C. Steel Substrate:
  - 1. High Performance Polyurethane, Pigmented Coating System:
    - a. Prime Coat: One coat Macropoxy 646 FC Epoxy B58-600 Series @ 5-10 mils DFT.
    - b. Topcoats: Two coats Pro Industrial Acrolon 100, Waterbased Urethane @ 3-5 mils DFT.
- D. Galvanized and Galvannealed Metal Substrates:
  - 1. High Performance Polyurethane Pigmented Coating System:
    - a. Prime Coat: One coat Macropoxy 646 FC Epoxy B58-600 Series @ 5-10 mils DFT.
    - b. Topcoats: Two coats Pro Industrial Acrolon 100, Waterbased Urethane @ 3-5 mils DFT.
- E. Aluminum Substrates (Not anodized or otherwise coated.):
  - 1. Latex Systems:
    - a. Prime Coat: One coat Pro-Cryl Universal Water Based Primer B66-310 series 5 mils WFT/2 mils DFT.
    - b. Topcoats: Two coats Pro Industrial Acrylic B66-650 Series 2.5-4.0 mils DFT.
- F. Exterior Gypsum Board Ceiling and Soffit Substrates:
  - 1. Latex System: (For walls/soffits/ceilings).
    - a. Prime Coat: One coat Latex Wood Primer 4 mils WFT/1.3 mils DFT.
    - b. Topcoats: Two coats Pro Industrial Acrylic Satin 6.5 mils WFT/2.5 mils DFT per coat.

END OF SECTION



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. This Section includes surface preparation and the application of paint systems on the following interior substrates:
  - 1. Concrete (vertical and overhead).
  - 2. Concrete floors.
  - 3. Concrete masonry units (CMU).
  - 4. Steel.
  - 5. Galvanized and galvanized metal.
  - 6. Aluminum (not anodized or otherwise coated).
  - 7. Wood.
  - 8. Gypsum board.
  - 9. Cotton or canvas insulation covering.
  - 10. Wood stain and transparent finishes.
- B. This Section includes surface preparation and the application of wood finishes on the following interior substrates:
  - 1. Exposed dimension lumber (rough carpentry).
  - 2. Dressed lumber (finish carpentry).
  - 3. Exposed wood panel products.
- C. Related Sections include the following:
  - 1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.
  - 2. Section 099113 "Exterior Painting" for surface preparation and the application of paint systems on exterior substrates.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.
  - 1. Submit Samples on rigid backing, 8 inches square.
  - 2. Step coats on Samples 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 List: For each 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.

#### 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 PROJECT 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.

#### 1.6 EXTRA MATERIALS

A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.

1. Quantity: Furnish an additional 5 percent, but not less than 1 gal. of each material and color applied.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

A. Basis of Design: Subject to compliance with requirements provide paints by the Sherwin Williams Company or comparable products by the following:

1. Benjamin Moore & Co.
2. Pratt and Lambert.

#### 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 the Drawings.

### 2.3 RELATED MATERIALS

A. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, aromatic polyurea with a Type A shore durometer hardness range of 90 to 95 according to ASTM D 2240.

1. Use semirigid joint fillers at contraction or control joints, construction joints, and isolation joints in slabs-on-grade.

B. Colors: Architect to select from the manufacturer's full range of colors.

## 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 work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:

1. Concrete: 12 percent.
2. Masonry (Clay and CMU): 12 percent.
3. Wood: 15 percent.
4. Gypsum Board: 12 percent.
5. Plaster: 12 percent.

C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

D. 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.

### 3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.

B. Remove plates, machined surfaces, and similar items already in place that 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.

2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
1. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint or seal surfaces if moisture content or alkalinity of surfaces to be painted or sealed exceeds that permitted in manufacturer's written instructions.
1. Concrete Floors: Remove oil, dust, grease, dirt, and other foreign materials. Comply with SSPC-SP-13/NACE 6 or ICRI No. 310.2. Perform the following minimum preparation. Perform additional methods if the following does not produce the adequate profile and porosity.
    - a. Patch and repair cracks, chips, and other surface imperfections prior buffing or sanding floors. Refer to specification section 091001 "Floor Preparation" for acceptable concrete repair or prep materials.
    - b. Use floor buffing machine or power tool with 60 to 80 Grit pads for sanding concrete surfaces. Vacuum clean surfaces of materials removed by sanding.
    - c. Scrape out debris and vacuum clean all joints in floor prior to installing semi-rigid joint filler.
- E. Clay Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content of surfaces or alkalinity of mortar joints to be painted exceed that permitted in manufacturer's written instructions.
- F. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- G. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
- H. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- I. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- J. Aluminum Substrates: Remove surface oxidation.
- K. Wood Substrates (Paint):
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.
- L. Wood Substrates (Staining and Transparent Finishes):

1. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each particular substrate condition and as specified.
    - a. Remove surface dirt, oil, or 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.
    - b. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.
    - c. Countersink steel nails, if used, and fill with putty tinted to final color to eliminate rust leach stains.
  2. Apply wood filler paste to open-grain woods, as defined in "MPI Architectural Painting Specification Manual," to produce smooth, glasslike finish.
- M. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.
1. Existing painted gypsum board substrates must be thoroughly cleaned to remove all dirt, oils and mold or mildew. Lightly sand surfaces after cleaning. Primer is to still be applied as part of the scheduled paint system.
- N. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

### 3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
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 Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
1. Mechanical Work:
    - a. Uninsulated metal piping.
    - b. Uninsulated plastic piping.
    - c. Pipe hangers and supports.
    - d. Tanks that do not have factory-applied final finishes.

- e. Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
- f. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
- g. Mechanical equipment that is indicated to have a factory-primed finish for field painting.

Electrical Work:

- h. Electrical equipment that is indicated to have a factory-primed finish for field painting.
- i. Electrical conduit that is surface mounted on painted walls.

### 3.4 FIELD QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure at any time and as often as Owner deems necessary during the period when paints are being applied:
  - 1. Owner may engage the services of a qualified testing agency to sample paint materials 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 with product requirements.
  - 3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

### 3.5 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.

### 3.6 INTERIOR PAINTING SCHEDULE

- A. Concrete Substrates (Vertical and overhead):
  - 1. Latex System.
    - a. Prime Coat: One coat Loxon Concrete and Masonry Primer-Sealer, 5.3 - 8.0 mils WFT/2.1 - 3.2 mils DFT.
    - b. Topcoats: Two coats Pro Mar 200 Latex Zero VOC eggshell, 4 mils WFT/1.6 mils DFT per coat.

- B. Concrete Floor Substrates, Nontraffic and Traffic Surfaces:
  - 1. See substrate preparation required for concrete surfaces in Part 3, 3.2 Preparation.
  - 2. Water Based Concrete Floor Clear Sealer System: Basic clear concrete sealer.
    - a. First Coat: Sealer, matching topcoat.
    - b. Topcoat: Sealer, Water based, for concrete floors.
      - 1) Manufacturer/Product: Sherwin-Williams, H & C Products Group, H & C Clarishield Water Based Wet Look Sealer.
    - c. Location: See Drawings where sealed concrete (SC) is listed as the floor finish.
- C. CMU Substrates:
  - 1. Latex System (Standard for CMU walls):
    - a. Prime Coat: One coat Prep Rite Block Filler B25W25, 4 mils WFT/1.6 mils DFT.
    - b. Topcoats: Two coats Pro Mar 200 Latex Zero VOC eggshell, 4 mils WFT/1.6 mils DFT per coat.
- D. Steel Substrates:
  - 1. Prime Finish General Note: Manufacturer of products will typically have standard primer applied. Primer to be compatible to final coatings listed or match the listed primers.
    - a. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
  - 2. Water Based Dry-Fall System (Overhead steel structure):
    - a. Prime Coat: One coat Pro-Cryl Universal Primer B66-310 Series 6.5 mils WFT / 2.5 mils DFT.
    - b. Topcoat: Two coats Waterborne Acrylic Dry Fall Eggshell, B42W00082-White, 5 mils WFT/ 3 mils DFT per coat.
  - 3. Latex Over Acrylic Primer System: (Miscellaneous metal, metal doors and frames (including coated/galvannealed base metal), access doors and frames, metal light frames in wood doors and other):
    - a. Prime Coat: One coat Pro-Cryl Universal Primer B66-310 Series 6.5 mils WFT/2.5 mils DFT.
    - b. Topcoat: Two coats Pro Industrial Acrylic B66-650 Semi-Gloss, 2.5-4.0 mils DFT.
  - 4. Water Based Epoxy Coating System, Two Component Epoxy (Handrails, guardrails and other items indicated to be epoxy painted):
    - a. Prime Coat: One coat Pro-Cryl Universal Primer B66-310 Series 6.5 mils WFT/2.5 mils DFT.
    - b. Topcoat: Two coats Pro Industrial Water Based Catalyzed Epoxy B73-360 Series Eggshell, 6.5 mils WFT/2.5 mils DFT.

- E. Galvanized and Galvannealed-Metal Substrates:
  - 1. Water-Based Dry Fall System (Metal decking and other):
    - a. One coat primer per manufacturer's recommendations.
    - b. Topcoat: Two coats Waterborne Acrylic Dryfall Eggshell, B42W00082-White, 5 mils WFT/3 mils DFT per coat.
    - c. Test patch for adhesion to be approved by Architect before installation.
- F. Aluminum Substrate (Not anodized or otherwise coated.):
  - 1. Water Based, Light Industrial Coating System:
    - a. Prime Coat: One coat Pro-Cryl Universal Primer B66-310 Series, 6.5 mils WFT / 2.5 mils DFT.
    - b. Topcoat: Two coats Pro Industrial Water Based Catalyzed Epoxy B73-360 Series Eggshell, 6.5 mils WFT/2.5 mils DFT.
- G. Wood Substrates (Dimension lumber, finish lumber, panel products):
  - 1. Latex System:
    - a. Prime Coat: One coat Premium Wall & Wood Primer B28W8111, 1.8 mils DFT.
    - b. Topcoat: Two coats Pro Industrial Acrylic Semi-Gloss, 4 mils WFT/1.4 mils DFT per coat.
- H. Gypsum Board Substrates:
  - 1. Latex System One (Standard for walls):
    - a. Prime Coat: One coat ProMar 200 Zero VOC Latex Primer, 4 mils WFT/1.3 mils DFT.
    - b. Topcoats: Two coats ProMar 200 Zero VOC Latex Eggshell. 4 mils WFT/1.6 mils DFT per coat.
  - 2. Latex System Two (Standard for soffits and ceilings):
    - a. Prime Coat: One coat ProMar 200 Zero VOC latex Primer, 4 mils WFT/1.3 mils DFT.
    - b. Topcoats: Two coats Pro Mar 200 Zero VOC Latex Flat, 4 mils WFT/1.6 mils DFT per coat.
  - 3. Latex System Three (Standard for walls/soffits/ceilings at wet areas and toilet rooms not indicated to be Epoxy):
    - a. Prime Coat: One coat ProMar 200 Zero VOC Latex Primer, 4 mils WFT/1.3 mils DFT.
    - b. Topcoats: Two coats ProMar 200 Zero VOC Latex Semi-Gloss. 4 mils WFT/1.8 mils DFT per coat.
  - 4. Latex System Five (Gypsum Board Finish Level 5):
    - a. Prime Coat: One coat Builders Solution System Interior Latex Primer/Surfacers A63W100, 4 mils WFT/1.8 mils DFT.
    - b. Topcoats: Two coats Pro Mar 200 Zero VOC Latex eggshell. 4 mils WFT/1.8 mils DFT per coat.



- I. Cotton or Canvas Insulation Covering Substrates:
  - 1. Latex System:
    - a. Topcoats: Two coats Pro Industrial Acrylic Semi-Gloss 6.5 mils WFT/2.5 mils DFT.
- J. Wood Substrates Stain and Transparent Finishes:
  - 1. Waterborne Clear Acrylic Over Stain System:
    - a. Stain coat: Minwax Performance Series Tintable Wood Stain 250.
    - b. Two Finish coats: SW Minwax Water Based Oil-Modified Polyurethane, Satin, 4 mils WFT/1.7 mils DFT per coat.
  - 2. Waterborne Clear Acrylic.
    - a. Two Finish coats: SW Minwax Water Based Oil-Modified Polyurethane, Satin, 4 mils WFT/1.7 mils DFT per coat.

END OF SECTION

SECTION 102600  
WALL PROTECTION

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. Corner guards.

- B. Related Requirements:

- 1. Section 061053 "Miscellaneous Rough Carpentry" for wood blocking required for installing wall protection.
- 2. Section 087100 "Door Hardware" for metal protective trim units, according to BHMA A156.6, used for armor, kick, mop, and push plates.
- 3. Section 092216 "Non-Structural Metal Framing" for steel sheet blocking required for installing wall protection.

1.3 SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, impact strength, dimensions of individual components and profiles, and finishes.
- 2. Include fire ratings of units recessed in fire-rated walls and listings for door-protection items attached to fire-rated doors.

- B. Shop Drawings: For each type of wall protection showing locations and extent.

- 1. Include plans, elevations, sections, and attachment details.

- C. Samples for Verification: For each type of exposed finish on the following products, prepared on Samples of size indicated below:

- 1. Minimum 2 inches by 4 inches square by specified thickness.

- D. Sample Warranty: For special warranty.

- E. Maintenance Data: For each type of wall and door protection product to include in maintenance manuals.

1. Include recommended methods and frequency of maintenance for maintaining best condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to finishes and performance.

#### 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. Corner-Guard Covers: Full-size plastic covers of maximum length equal to 2 percent of each type, color, and texture of cover installed, but no fewer than two, 48-inch long units.
  2. Mounting and Accessory Components: Amounts proportional to the quantities of extra materials. Package mounting and accessory components with each extra material.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store wall and door protection in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.
  1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.
  2. Keep plastic materials out of direct sunlight.
  3. Store plastic wall- and door-protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.
    - a. Store corner-guard covers in a vertical position.
    - b. Store wall-guard, handrail and other covers in a horizontal position.

#### 1.6 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of wall- and door-protection units that fail in materials or workmanship within specified warranty period.
  1. Failures include, but are not limited to, the following:
    - a. Structural failures including detachment of components from each other or from the substrates, delamination, and permanent deformation beyond normal use.
    - b. Deterioration of metals, metal finishes, plastics, and other materials beyond normal use.
  2. Warranty Period: Five years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Basis of Design: Subject to compliance with requirements, provide products by Construction Specialties, Inc., or products by one of the following:
  1. IPC Door and Wall Protection Systems; Division of InPro Corporation.
  2. Pawling Corporation

3. Manufacturers as listed for specific products

## 2.2 PERFORMANCE REQUIREMENTS

- A. Surface Burning Characteristics: Comply with ASTM E84 or UL 723; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  1. Flame-Spread Index: 25 or less.
  2. Smoke-Developed Index: 450 or less.
- B. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities and ICC A117.1.

## 2.3 CORNER GUARDS

- A. Surface-Mounted, Plastic-Cover Corner Guards (CG-X): Manufacturer's standard assembly consisting of snap-on, resilient plastic cover installed over retainer; including mounting hardware; fabricated with 90-degree turn to match wall condition.
  1. Model: Construction Specialties SSM-20AN
  2. Cover: Extruded rigid plastic, minimum 0.078-inch wall thickness as follows:
    - a. Profile: Nominal 2-inch- long leg and 1/4-inch corner radius.
    - b. Height: 4 feet.
    - c. Color and Texture: As selected by Architect from manufacturer's full range.
  3. Continuous Retainer: Minimum 0.060-inch- thick, one-piece, extruded aluminum.
  4. Retainer Clips: Manufacturer's standard impact-absorbing clips.
  5. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.

## 2.4 MATERIALS

- A. Plastic Materials: Chemical- and stain-resistant, high-impact-resistant plastic with integral color throughout; extruded and sheet material as required; thickness as indicated.
- B. Polycarbonate Plastic Sheet: ASTM D6098, S-PC01, Class 1 or Class 2, abrasion resistant; with a minimum impact-resistance rating of 15 ft.-lbf/in. of notch when tested according to ASTM D256, Test Method A.
- C. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- D. Adhesive: As recommended by protection product manufacturer.

## 2.5 FABRICATION

- A. Fabricate wall protection according to requirements indicated for design, performance, dimensions, and member sizes, including thicknesses of components.

- B. Factory Assembly: Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.
- C. Quality: Fabricate components with uniformly tight seams and joints and with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.

## 2.6 FINISHES

- A. Protect 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.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine walls to which wall protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
  - 1. For wall protection attached with adhesive, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Complete finishing operations, including painting, before installing wall and door protection.
- B. Before installation, clean substrate to remove dust, debris, and loose particles.

### 3.3 INSTALLATION

- A. Installation Quality: Install wall and door protection according to manufacturer's written instructions, level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
- B. Mounting Heights: Install wall and door protection in locations and at mounting heights indicated on Drawings.
- C. Accessories: Provide splices, mounting hardware, anchors, trim, joint moldings, and other accessories required for a complete installation.
  - 1. Provide anchoring devices and suitable locations to withstand imposed loads.

2. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches apart.
3. Adjust end and top caps as required to ensure tight seams.

3.4 CLEANING

- A. Immediately after completion of installation, clean plastic covers and accessories using a standard ammonia-based household cleaning agent.
- B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION

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. This Section includes the following:

- 1. Public-use washroom accessories.
- 2. Public-use shower room accessories.
- 3. Underlavatory guards.
- 4. Custodial accessories.

- B. Related Sections include the following:

- 1. Division 06 Section "Miscellaneous Carpentry" for wood blocking required for installing accessories.
- 2. Division 09 Section "Non-Structural Metal Framing" for steel sheet blocking required for installing accessories.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following:

- 1. Construction details and dimensions.
- 2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
- 3. Material and finish descriptions.
- 4. Features that will be included for Project.
- 5. Manufacturer's warranty.

- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

- 1. Identify locations using room designations indicated on Drawings.
- 2. Identify products using designations indicated on Drawings.

- C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

1.5 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.

1.6 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.
- B. Brass: ASTM B 19 flat products; ASTM B 16, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.
- C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.0359-inch minimum nominal thickness.
- D. Galvanized Steel Sheet: ASTM A 653/A 653M, with G60 hot-dip zinc coating.
- E. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- G. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.
- H. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product by Bobrick Washroom Equipment, Inc. or a comparable product by one of the following:
  - 1. American Specialties, Inc.
  - 2. Bradley Corporation.



B. Toilet Tissue (Roll) Dispenser TPD-1:

1. Basis-of-Design Product: Bobrick B-2740.
2. Description: Double-roll dispenser, open without hood.
3. Mounting: Surface mounted.
4. Operation: Non-control delivery.
5. Minimum Capacity: Designed for 5 or 6 diameter tissue rolls.
6. Material and Finish: Cast aluminum satin finish.

C. Paper Towel (Folded) Dispenser TD-1:

1. Basis-of-Design Product: Bobrick B-262.
2. Mounting: Surface mounted.
3. Minimum Capacity: 400 C-fold or 525 multifold towels.
4. Material and Finish: Stainless steel, No. 4 finish (satin).
5. Lockset: Tumbler type..
6. Refill Indicators: Pierced slots at sides or front.

D. Liquid Soap Dispenser SD-1:

1. Basis-of-Design Product: Bobrick B-2111.
2. Description: Combination unit for dispensing soap in liquid or lotion form.
3. Mounting: Vertically oriented, surface mounted.
4. Capacity: 40 fl. oz.
5. Materials: Stainless steel, No. 4 finish (satin) body with black molded plastic push button spout and valve.
6. Lockset: Tumbler type.
7. Refill Indicator: Window type.

E. Grab Bar GB-X:

1. Basis-of-Design Product: Bobrick B-5806
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch thick.
  - a. Finish: Smooth, No. 4, satin finish.
4. Outside Diameter: 1-1/4 inches.
5. Configuration and Length:
  - a. GB-36" B-5806 x 36
  - b. GB-42" B-5806 x 42
  - c. GB-18" B-5806 x 18
  - d. GB-24" B-5806 x 24
  - e. GB-36" x 54" B-5837 x 36 x 54

F. Sanitary-Napkin Disposal Unit SND-1:

1. Basis-of-Design Product: Bobrick B-254.
2. Mounting: Surface mounted.
3. Door or Cover: Self-closing disposal-opening cover and hinged face panel with tumbler lockset.
4. Receptacle: Removable.
5. Material and Finish: Stainless steel, No. 4 finish (satin).

G. Mirror Unit:

1. Basis-of-Design Product: Bobrick B-290 Series with tempered glass.
2. Frame: Stainless-steel angle 3/4" by 3/4", 0.05 inch thick.
  - a. Corners: Welded and ground smooth.
3. Back: Galvanized steel sheet with 3/16 inch polyethylene padding.
4. Hangers: Manufacturers standard rigid, tamper- and theft-resistant installation, using method indicated below.
  - a. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a tools to remove.
5. Size: As indicated on Drawings
  - a. M-1 = 24" x 36" B-290 2436

H. Diaper-Changing Station DCS-1:

1. Basis-of-Design Product: Kola Kare KB300.
2. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap.
  - a. Engineered to support a minimum of 200 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: High-density polyethylene in manufacturer's standard colors.
6. Liner Dispenser: Built in with nylon safety straps for securing infants.

2.3 PUBLIC-USE SHOWER ROOM ACCESSORIES

A. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product by Bobrick Washroom Equipment, Inc. or a comparable product by one of the following:

1. American Specialties, Inc.
2. Bradley Corporation.

B. Shower Curtain Rod SCR-1:

1. Basis-of-Design Product: Bobrick B-6107.
2. Description: 1-inch OD; fabricated from nominal 0.0375-inch- thick stainless steel.
3. Mounting Flanges: Stainless-steel flanges designed for exposed fasteners.
4. Finish: No. 4 (satin).
5. Size:
  - a. SCR-1 = 60" B-6107 x 60

C. Shower Curtain: SC-1

1. Basis-of-Design Product: Bobrick 204-3.
2. Size: Minimum 70 inches wide by 72 inches high.
3. Material: 0.008-inch- thick vinyl, with integral antibacterial agent.
4. Color: White.
5. Grommets: Corrosion resistant at minimum 6 inches o.c. through top hem.
6. Shower Curtain Hooks: Stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.

D. Removable Shower Seat FSS-1:

1. Basis-of-Design Product: Seachrome Redondo Edge-Mounted Tub Seat.
2. Configuration: Bench seat, designed for wheelchair access.
3. Seat: Phenolic or polymeric composite of slat-type or one-piece construction in color as selected by Architect.
4. Mounting Mechanism: Adjustable dual clamps with adjustable legs.
5. Dimensions: 16 inches by 26-1/2 inches overall.

E. Robe Hook RH-1:

1. Basis-of-Design Product: Bobrick B-76717.
2. Description: Single-prong unit.
3. Material and Finish: Stainless steel, No. 4 finish (satin).

F. Towel Bar TWB-1:

1. Basis-of-Design Product: Bobrick B-76737.
2. Description: 3/4-inch square tube with rectangular end brackets.
3. Mounting: Flanges with concealed fasteners.
4. Length: 24 inches.
5. Material and Finish: Stainless steel, No. 4 finish (satin).

## 2.4 UNDERLAVATORY GUARDS

- A. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product by Truebro, Inc. or a comparable product by one of the following:

1. Plumberex Specialty Products, Inc.
2. TCI Products.

B. Underlavatory Guard LG-1:

1. Basis of Design Product: Truebro Lav-Guard.
2. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping, and allow service access without removing coverings.
3. Material and Finish: Antimicrobial, molded-plastic, white.

## 2.5 CUSTODIAL ACCESSORIES

- A. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product by Bobrick Washroom Equipment, Inc. or a comparable product by one of the following:

1. American Specialties, Inc.
2. Bradley Corporation.

B. Mop and Broom Holder MH-1:

1. Basis-of-Design Product: Bobrick B-223
2. Description: Unit with holders.
3. Length: 24 inches.
4. Mop/Broom Holders: Three, spring-loaded, rubber hat, cam type.
5. Material and Finish: Stainless steel, No. 4 finish (satin).

2.6 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 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.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to method in ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION

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 extinguishers.

- B. Related Requirements:

- 1. Section 104416 "Fire Extinguishers" for portable, hand-carried fire extinguishers to be placed in this sections by fire-protection cabinets.

1.3 PREINSTALLATION CONFERENCE

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Review methods and procedures related to fire-protection cabinets, including, but not limited to, the following:
  - a. Schedules and coordination requirements.

1.4 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-, semirecessed-, or surface-mounting method and relationships of box and trim to surrounding construction.
- 2. Show location of knockouts for hose valves.

- B. Shop Drawings: For fire-protection cabinets.

- 1. Include plans, elevations, sections, details, and attachments to other work.

- C. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semirecessed, or surface mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function. Use same designations indicated on Drawings.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.6 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.

2.3 FIRE-EXTINGUISHER CABINETS

- A. Fire-Extinguisher Cabinets: Suitable for type, size and capacity of fire extinguishers indicated.
  - 1. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide products by Larsen's Manufacturing Company or comparable products by one of the following:
    - a. Badger Fire Protection.
    - b. J. L. Industries, Inc.; a division of Activar Construction Products Group.
    - c. Kidde Residential and Commercial Division
- B. Fire Extinguisher Cabinet Type 1 (FEC -1):
  - 1. Larsen's Model No. AL 2409-6R.
  - 2. Cabinet Construction: Nonrated.
  - 3. Cabinet Material: Cold-rolled steel sheet.
  - 4. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
    - a. Rolled- Edge Trim: 2-1/2-inch backbend depth.
  - 5. Cabinet Trim Material: Extruded-aluminum shapes.
  - 6. Door Material: Extruded-aluminum shapes or aluminum sheet.
  - 7. Door Style: Vertical duo panel with frame.
  - 8. Door Glazing: Tempered float glass (clear).
  - 9. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

- a. Projecting door pull and friction latch.
- b. Provide Continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

C. Fire Extinguisher Cabinet Type 2 (FEC -2):

1. Larsen's Model No. FS AL 2409-6R.
2. Cabinet Construction: One-hour fire rated or Two-hour fire rated.
  - a. 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.
3. Cabinet Material: Cold-rolled steel sheet.
4. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
  - a. Rolled- Edge Trim: 2-1/2-inch backbend depth.
5. Cabinet Trim Material: Extruded-aluminum shapes.
6. Door Material: Extruded-aluminum shapes or aluminum sheet.
7. Door Style: Vertical duo panel with frame.
8. Door Glazing: Tempered float glass (clear).
9. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
  - a. Projecting door pull and friction latch.
  - b. Provide Continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.

D. 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. 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: Red.
    - 4) Orientation: Vertical.

E. Materials:

1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
  - a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
  - b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

- c. Color: White.
2. Aluminum: ASTM B221 (ASTM B221M) for extruded shapes and aluminum sheet, with strength and durability characteristics of not less than Alloy 6063-T5 for aluminum sheet.
  - a. Finish: Clear anodic.
3. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

## 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.
- 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 extruded 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 semirecessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.



3.2 PREPARATION

- A. Prepare recesses for semirecessed 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: 54 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 semi-recessed fire-protection cabinets.
  - 2. 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

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 Sections:
  - 1. Division 10 Section "Fire Extinguisher Cabinets."

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. 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.
- C. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.
- D. Warranty: Sample of special warranty.

1.4 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.

1.5 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. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
    - b. Faulty operation of valves or release levers.

2. Warranty Period: Six 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 fire protection cabinet and mounting bracket indicated.
  1. Basis-of-Design Manufacturer: Subject to compliance with requirements, provide products by Larsen's Manufacturing Company or comparable products by one of the following:
    - a. Badger Fire Protection.
    - b. J. L. Industries, Inc.; a division of Activar Construction Products Group.
    - c. Kidde Residential and Commercial Division
  2. Fire Extinguisher Type 1 (FE-1):
    - a. Larsen's Model No. MP5.
      - 1) Valves: Manufacturer's standard.
      - 2) Handles and Levers: Manufacturer's standard.
      - 3) Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
    - b. Multipurpose Dry-Chemical Type in Steel Container: UL-rated 2-A:10-B:C, 5-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
      - 1) Finish Color: Red.

### 2.3 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.

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: 54 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

SECTION 113013

RESIDENTIAL APPLIANCES

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. Cooking appliances.
  - 2. Refrigeration appliances.
  - 3. Cleaning appliances.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include installation details, material descriptions, dimensions of individual components, and finishes for each appliance.
  - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
- B. Product Schedule: For appliances. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. Product Certificates: For each type of appliance.
- C. Field quality-control reports.
- D. Sample Warranties: For manufacturers' special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each residential appliance to include in operation and maintenance manuals.

1.6 WARRANTY

- A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain residential appliances from single source.

2.2 PERFORMANCE REQUIREMENTS

- A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Accessibility: Where residential appliances are indicated to comply with accessibility requirements, comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design and ICC A117.1.

2.3 MICROWAVE OVENS

- A. Microwave Oven MO-1:

- 1. Manufacturers:

- a. Frigidaire
    - b. GE
    - c. Kenmore
    - d. Whirlpool

- 2. Mounting: None

- 3. Type: Conventional.

- 4. Dimensions:

- a. Width: 24 inches.
    - b. Depth: 19-1/2 inches.
    - c. Height: 14 inches.

- 5. Capacity: 2.0 cu. ft.

- 6. Oven Door: Door with observation window and pushbutton latch release.

- 7. Microwave Power Rating: 1200 W.

- 8. Electric Power Supply: 120 V, 60 Hz, 1 phase, 15 A

- 9. Controls: Digital panel controls and timer display.

- 10. Other Features:

- a. Turntable
    - b. Lock-out feature
    - c. Sensor cooking controls
    - d. 10 power levels

- 11. Material: Manufacturer's standard.

- a. Color/Finish: White.

2.4 REFRIGERATOR/FREEZERS

- A. Refrigerator/Freezer RF-1: Two-door refrigerator/freezer with freezer on top and complying with AHAM HRF-1.
1. Manufacturers:
    - a. Frigidaire
    - b. GE
    - c. Kenmore
  2. Type: Freestanding.
  3. Dimensions:
    - a. Width: 28 inches.
    - b. Depth: 31-5/8 inches.
    - c. Height: 65 inches.
  4. Storage Capacity:
    - a. Refrigeration Compartment Volume: 11.5 cu. ft.
    - b. Freezer Volume: 4 cu. ft.
    - c. Shelves: Two adjustable spill-proof glass shelves minimum.
  5. General Features:
    - a. Door Configuration: Two with reversible swings.
    - b. Separate temperature controls for each compartment.
  6. Refrigerator Features:
    - a. Interior light in refrigeration compartment.
    - b. Door Storage: Modular compartments.
  7. Freezer Features: One freezer compartment configured with one door.
    - a. Automatic defrost.
    - b. Interior light in freezer compartment.
    - c. Ice maker
  8. Front Panel(s): Porcelain enamel
    - a. Panel Color: White
  9. Appliance Color/Finish: White.

2.5 DISHWASHERS

A. Dishwasher DW-1: Complying with AHAM DW-1.

1. Manufacturers:
  - a. Frigidaire
  - b. GE
  - c. Whirlpool
2. Type: Built-in undercounter.
3. Dimensions:
  - a. Width: 24 inches.
  - b. Depth: 24 inches
  - c. Height: Adjustable, 32-1/2 inches – 35-1/4 inches.
4. Capacity:
  - a. International Place Settings of China: 12.
5. Tub and Door Liner: Stainless steel with sealed detergent and automatic rinsing-aid dispensers.
6. Rack System: Nylon-coated sliding dish racks, with removable cutlery basket.
7. Controls: Touch-pad controls with minimum four wash cycles and hot-air and heat-off drying cycle options.
8. Features:
  - a. Waste food disposer.
  - b. Self-cleaning food-filter system.
  - c. Hot-water booster heater for 140 deg F wash water with incoming water at 100 deg F (38 deg C).
  - d. Digital display panel.
9. Front Panel: Porcelain enamel
  - a. Panel Color: White.
10. Appliance Color/Finish: White.

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.



PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.
- B. Examine roughing-in for piping systems to verify actual locations of piping connections before appliance installation.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install appliances according to manufacturer's written instructions.
- B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.
  - 2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
  - 3. Operational Test: After installation, start units to confirm proper operation.
  - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.
- B. An appliance will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain residential appliances.

END OF SECTION

SECTION 122413

ROLLER WINDOW SHADES

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. Manually operated roller shades with single rollers.

- B. Related Requirements:

- 1. Section 061053 "Miscellaneous Rough Carpentry" for wood blocking for mounting roller shades and accessories.

1.3 SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.

- B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations.

- C. Samples for Verification: For each type of roller shade.

- 1. Shadeband Material: Not less than 3 inches square. Mark interior face of material if applicable.

- 2. Installation Accessories: Full-size unit, not less than 10 inches long.

- D. Product Schedule: For roller shades. Use same designations indicated on Drawings.

- E. Qualification Data: For Installer.

- F. Operation and Maintenance Data: For roller shades to include in maintenance manuals.

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.

1.5 WARRANTY

- A. Roller Shade Hardware and Chain Warranty: Manufacturer's standard non-depreciating warranty for interior shading.
  - 1. Shade Hardware: 10 years unless otherwise indicated.
  - 2. Standard Shadecloth: Manufacturer's standard twenty-five year warranty.
  - 3. Roller Shade Installation: One year from date of Substantial Completion.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Installer to be an approved for installation by the fabricator of products.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance to requirements, provide products by MechoShade Systems LLC or comparable product by one of the following:
  - 1. Draper Inc.
  - 2. Hunter Douglas Contract.
- B. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH SINGLE ROLLERS

- A. Basis of Design Product: Subject to compliance to requirements, provide Mecho/5 System Model by MechoShade Systems LLC.
- B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated.

1. Bead Chains: Stainless steel.
    - a. Loop Length: Full length of roller shade.
    - b. Limit Stops: Provide upper and lower ball stops.
    - c. Chain-Retainer Type: Chain tensioner, sill mounted.
  2. Spring Lift-Assist Mechanisms: Manufacturer's standard for balancing roller shade weight and for lifting heavy roller shades.
    - a. Provide for shadebands that weigh more than 10 lb or for shades as recommended by manufacturer, whichever criterion is more stringent.
  - C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
    1. Roller Drive-End Location: As indicated on Drawings.
    2. Direction of Shadeband Roll: Regular, from back (exterior face) of roller
    3. Shadeband-to-Roller Attachment: Manufacturer's standard method.
  - D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller assembly, operating mechanism, installation accessories, and mounting location and conditions indicated.
  - E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade that is operated by one roller drive-end assembly.
  - F. Shadebands:
    1. Shadeband Material: Light-filtering fabric.
    2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
      - a. Type: Enclosed in sealed pocket of shadeband material.
  - G. Installation Accessories:
    1. Exposed Headbox: Rectangular, extruded-aluminum enclosure including front fascia, top and back covers, endcaps, and removable bottom closure.
      - a. MechoShade No. 4133 Pocket.
      - b. Height: Manufacturer's standard height required to enclose roller and shadeband assembly when shade is fully open, but not less than 5 inches.
      - c. Endcap Covers: To cover exposed endcaps.
    2. Installation Accessories Color and Finish: As selected from manufacturer's full range of powder coat finishes.
- 2.3 SHADEBAND MATERIALS
- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701 Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - B. Light-Filtering Fabric: Woven fabric, stain and fade resistant.

1. Source: Roller shade manufacturer
2. Type: PVC-coated polyester.
3. Weave: Basketweave.
4. Weight: oz./sq. yd TBD.
5. Roll Width: Up to 98 inches.
6. Orientation on Shadeband: Railroaded.
7. Openness Factor: Percent TBD.
8. Color: As selected by Architect from manufacturer's full range.

#### 2.4 ROLLER SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F.
  1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill or -floor dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch
- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible, except as follows:
  1. Vertical Shades: Where width-to-length ratio of shadeband is equal to or greater than 1:4, provide battens and seams at uniform spacings along shadeband length to ensure shadeband tracking and alignment through its full range of movement without distortion of the material.
  2. Railroaded Materials: Railroad material where material roll width is less than the required width of shadeband and where indicated. Provide battens and seams as required by railroaded material to produce shadebands with full roll-width panel(s) plus, if required, one partial roll-width panel located at top of shadeband.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 ROLLER SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
  1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.

- B. Fascia, Headbox and End Covers: Install to conceal roller and operating mechanism. Do not use exposed fasteners.
- C. Roller Shade Locations: As indicated on Drawings.

### 3.3 ADJUSTING

- A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

### 3.4 CLEANING AND PROTECTION

- A. Clean roller shade surfaces, after installation, according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

END OF SECTION