

SECTION 00 01 00

TITLE PAGE

ARCHITECT

WALLACE ARCHITECTS, LLC

302 CAMPUSVIEW DRIVE, SUITE 208  
COLUMBIA, MO 65201  
(573) 256-7200

3999 HARBORWALK DRIVE, SUITE D  
RIDGELAND, MS 39157  
(601) 813-9154

SIGNATURE AREA

**ARCHITECT:** Wallace Architects, LLC

302 Campusview Drive, Suite 208, Columbia, MO 65201

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

**OWNER:** Capstone at Coweta Trails II, LP

3556 S. Culpepper Circle, Suite 4, Springfield, MO 65804

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

**CONTRACTOR:** Hamilton Builders Contracting, LLC

3556 S. Culpepper Circle, Suite 4, Springfield, MO 65804

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

**STATE AGENCY REPRESENTATIVE:** (OHFA)

205 NW 63rd Street, Suite 140, Oklahoma City, OK 73116

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

Wallace Project No. 4256

OHFA # 22-01-02

05/19/2023



Capstone at Coweta Trails II  
Coweta, Oklahoma

ISSUE SET



**SECTION 00 01 09  
ADDENDA AS ISSUED**

**DOCUMENTS**

**1.01 WHEN APPLICABLE TO THIS CONTRACT, ATTACHED FOLLOWING THIS PAGE IS:**

**ADDENDA**

<u><b>ADDENDUM #:</b></u>	<u><b>DATE:</b></u>	<u><b>DESCRIPTION:</b></u>
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302 Campusview Drive, Suite 208  
Columbia, MO 65201  
573-256-7200



# Addendum 1

**Capstone at Coweta Trails II  
Coweta, OK  
Wallace Job 4256  
OHFA 22-01-02**

**July 20, 2023**

The following are deletions, additions and/or clarifications to the Plans and Specifications and shall be considered as if originally contained therein:

## **Architectural Drawings prepared by Wallace Architects, LLC (Revisions attached):**

### 0.0

1. The Index to Drawings has been revised to reflect current Drawing Sheet Titles and Dates consistent with the affected Drawing Sheets added/revised as part of this Addendum.
2. The Project Information has been revised to reflect updated codes.

### LS1.0, LS1.1, LS1.2

1. The Sheets have been updated to coordinate changes with Sheet 0.0 revisions.

## **Attachments:**

1. The following 24" x 36" Architectural Drawing Sheets, prepared by Wallace Architects, LLC, are being reissued (labeled as Addendum #1, clouded with a delta #1 and bearing a latest revision date of 07/20/2023):

0.0

LS1.0

LS1.1

LS1.2

END OF ADDENDUM 1



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**END OF SECTION**



**SECTION 00 11 21**  
**INVITATION FOR SUB-CONTRACT BIDS**

**ISSUED BY:**

Hamilton Builders Contracting, LLC

**Address:**

3556 S. Culpepper Circle, Suite 4  
Springfield, MO 65804

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

**TO: POTENTIAL BIDDERS**

Your firm is invited to submit a Stipulated Sum proposal under seal to furnish all labor, materials, and equipment necessary to perform the work of the appropriate bid package for the construction work of:

Capstone at Coweta Trails II  
S. 273 rd E. Avenue  
Coweta, Oklahoma 74429

Bid Documents may be obtained by contacting Hamilton Builders Contracting, LLC.

Submit your offer on the Bid Form provided. Bidders may supplement this form as appropriate.

No proposals may be withdrawn for a period of 30 days after scheduled closing date for submission.

The Contractor reserves the right to reject any or all proposals, and/or waive any technicalities therein, and/or determine the lowest responsible bidders.

As a precondition to the contract award, the type of work completed, and the bidders' financial status will be reviewed and considered.

**SIGNATURE**

For: Hamilton Builders Contracting, LLC

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

Signed: \_\_\_\_\_  
(Authorized signing officer)

**END OF SECTION**



**SECTION 00 21 13**  
**INSTRUCTIONS TO BIDDERS**

**SUMMARY**

**1.01 DOCUMENT INCLUDES**

- A. Invitation
  - 1. Bid Submission
  - 2. Intent
  - 3. Work Identified in Contract Documents
- B. Bid Documents and Contract Documents
  - 1. Definitions
  - 2. Contract Documents Identification
  - 3. Availability
  - 4. Examination
  - 5. Inquiries/Addenda
  - 6. Product/Assembly/System Substitutions
- C. Site Assessment
  - 1. Site Examination
- D. Qualifications
  - 1. Qualifications
  - 2. Subcontractors/Suppliers/Others
- E. Bid Submission
  - 1. Submission Procedure
  - 2. Bid Ineligibility
- F. Bid Enclosures/Requirements
  - 1. Additional Bid Information
  - 2. Selection and Award of Alternates
- G. Offer Acceptance/Rejection
  - 1. Duration of Offer
  - 2. Acceptance of Offer

**INVITATION**

**2.01 BID SUBMISSION**

- A. Bid submission details can be found in the invitation to bid.
- B. Amendments to the submitted offer will be permitted if received in writing prior to bid closing and if endorsed by the same party or parties who signed and sealed the offer.

**2.02 INTENT**

- A. The intent of this Bid request is to obtain an offer to perform work to complete a multi-family residential renovation project located at S. 273 rd E. Avenue, Coweta, Oklahoma 74429 for a Stipulated Sum contract, in accordance with the Contract Documents.

**2.03 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS**

- A. Work of this proposed Contract comprises building construction and site development, including demolition, general construction, mechanical, electrical, and civil Work.

**2.04 CONTRACT TIME**

- A. Identify Contract Time in the Bid Form. The completion date in the Agreement shall be the Contract Time added to the commencement date.

**BID DOCUMENTS AND CONTRACT DOCUMENTS**

**3.01 DEFINITIONS**

- A. Contract Documents: Defined in AIA A201 Article 1 including issued Instructions and Addenda.
- B. Bid, Offer, Proposal, or Bidding: Act of submitting an offer under seal.
- C. Bid Amount: Monetary sum identified by the Bidder in the Bid Form.

### **3.02 CONTRACT DOCUMENTS IDENTIFICATION**

- A. Contract Documents are identified as Project Number 4256, as prepared by Wallace Architects, LLC, and with contents as identified in the Table of Contents.

### **3.03 AVAILABILITY**

- A. Bid Documents may be obtained by contacting Hamilton Builders Contracting, LLC
- B. Bid Documents are made available only for the purpose of obtaining offers for this project. Their use does not grant a license for other purposes.

### **3.04 EXAMINATION**

- A. Bid Documents may also be viewed, by appointment only, at the office of the Architect which is located at 302 Campusview Drive, Columbia, MO 65201.
- B. Upon receipt of Bid Documents verify that documents are complete. Notify Architect should the documents be incomplete.
- C. Immediately notify Architect upon finding discrepancies or omissions in the Bid Documents.

### **3.05 INQUIRIES/ADDENDA**

- A. Written Instructions and Addenda may be issued during the bidding period. All Instructions and Addenda become part of Contract Documents. Include resultant costs in the Bid Amount.
- B. Verbal answers are not binding on any party.
- C. Clarifications requested by bidders must be in writing not less than 7 days before date set for receipt of bids. The reply will be in the form of written Instructions or an Addendum, a copy of which will be forwarded to known recipients and all other bidding parties.

### **3.06 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS**

- A. General Requirements for Substitution Requests:
  - 1. Provide sufficient information to determine acceptability of proposed substitutions.
  - 2. Provide complete information on required revisions to other work to accommodate each proposed substitution.
- B. Substitution Request Time Restrictions:
  - 1. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 5 days before receipt of bids.
- C. Review and Acceptance of Request:
  - 1. Architect may approve the proposed substitution and will issue an Addendum to known bidders.
  - 2. For approved substitutions, include representation of changes in the bid, if any, required in the work and changes to Contract Time and Contract Sum to accommodate such substitutions. A later claim by the bidder for an addition to the Contract Time or Contract Sum because of changes in work necessitated by use of substitutions will not be considered.

## **SITE ASSESSMENT**

### **4.01 SITE EXAMINATION**

- A. Examine the project site before submitting a bid.

## **QUALIFICATIONS**

### **5.01 EVIDENCE OF QUALIFICATIONS**

- A. To demonstrate qualification for performing the Work of this Contract, bidders may be requested to submit written evidence of financial position, previous experience, and license to work in the State.

## **BID SUBMISSION**

### **6.01 SUBMISSION PROCEDURE**

- A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.

- B. Submit one copy of the executed offer on the Bid Forms provided, signed and sealed in a closed opaque envelope, clearly identified with bidder's name, project name and Contractor's name on the outside.
- C. Improperly completed information or irregularities in bid bond, may be cause not to open the Bid Form envelope and declare the bid invalid or informal.

## **6.02 BID INELIGIBILITY**

- A. Bids that are received verbally, by telephone, or facsimile shall be declared unacceptable.
- B. Bids containing alternate proposals of bidder's own choosing, not previously approved, shall be declared unacceptable.
- C. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, unexplained erasures or alterations, or irregularities of any kind, may at the discretion of the Contractor, be declared unacceptable.
- D. Bid Forms, Appendices, and enclosures that are improperly prepared may, at the discretion of Contractor, be declared unacceptable.

## **BID ENCLOSURES/REQUIREMENTS**

### **7.01 INSURANCE**

- A. Provide an executed "Undertaking of Insurance" on a standard form provided by the insurance company stating their intention to provide insurance to the bidder in accordance with the insurance requirements of Contract Documents.

### **7.02 BID FORM REQUIREMENTS**

- A. Complete all requested information in the Bid Form and Appendices.

### **7.03 BID FORM SIGNATURE**

- A. The Bid Form shall be signed by the bidder, as follows:
  - 1. Sole Proprietorship: Signature of sole proprietor in the presence of a witness who will also sign. Insert the words "Sole Proprietor" under the signature.
  - 2. Partnership: Signature of all partners in the presence of a witness who will also sign. Insert the word "Partner" under each signature.
  - 3. Corporation: Signature of a duly authorized signing officer(s) in their normal signatures. Insert the officer's capacity in which the signing officer acts, under each signature. Affix the corporate seal. If the bid is signed by officials other than the president and secretary of the company, or the president/secretary/treasurer of the company, a copy of the by-law resolution of their board of directors authorizing them to do so, must also be submitted with the Bid Form in the bid envelope.
  - 4. The signature of the individual or individuals authorized to bind the Bidder shall be in longhand.

### **7.04 SELECTION AND AWARD OF ALTERNATES**

- A. Indicate variation of bid price for Alternates listed on the Bid Form. Unless otherwise indicated, indicate Alternates as a difference in bid price by adding to or deducting from the base bid price.
- B. Bids will be evaluated on the total of the base bid price and all of the Alternates. After determination of the successful bidder, consideration will be given to which Alternates will be included in the Work.

## **OFFER ACCEPTANCE/REJECTION**

### **8.01 DURATION OF OFFER**

- A. Bids shall remain open to acceptance and shall be irrevocable for a period of thirty (30) days after the bid closing date.
- B. Alternates shall remain open to acceptance and prices stipulated shall be irrevocable for a period of ninety (90) days after the bid closing date.

### **8.02 ACCEPTANCE OF OFFER**

- A. Contractor reserves the right to accept or reject any or all offers or to waive any technicalities therein.

- B. After acceptance by Contractor, Contractor, will issue to the successful bidder, a written Bid Acceptance.

**END OF SECTION**



**BID FORM FOR SUB-CONTRACT**  
**FOR** \_\_\_\_\_

**Bid From:** \_\_\_\_\_

a Corporation organized and existing under the Laws of the State of \_\_\_\_\_

a Partnership consisting of \_\_\_\_\_

an Individual trading as \_\_\_\_\_

The Undersigned, in compliance with the Invitation For Sub-Contract Bids for the construction work of Capstone at Coweta Trails II, Coweta, Oklahoma, having examined all of the Contract Documents and any related documents, and having viewed the site of the proposed work, being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of labor; Hereby propose to furnish labor, equipment, materials, and supplies to perform the work in accordance with said Contract Documents, within the time set forth herein, and at the prices stated below. These prices are to cover all expenses included in performing the work received under the Contract Documents, of which this Proposal is part.

I (We) acknowledge receipt of the following Addenda: (if none issued, leave blank or write "N/A")

Addendum #1 \_\_\_\_\_ Addendum #2 \_\_\_\_\_ Addendum #3 \_\_\_\_\_

Addendum #4 \_\_\_\_\_ Addendum #5 \_\_\_\_\_ Addendum #6 \_\_\_\_\_

The undersigned proposes and agrees to perform the \_\_\_\_\_ work  
(Portion of Work)  
in \_\_\_\_\_ calendar days from the issuance of a Notice To Proceed,  
for the combined stipulated sum of: \_\_\_\_\_

\_\_\_\_\_ Dollars \$ \_\_\_\_\_

In submitting this bid it is understood that the right is reserved by said Contractor to reject any or all bids, and it is agreed that this bid shall remain open to acceptance and shall be irrevocable for a period of thirty (30) days after opening thereof.

Dated this: \_\_\_\_\_ day of \_\_\_\_\_, 2022.

Signature(s)

\_\_\_\_\_

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

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

\_\_\_\_\_

Business Address

SEAL:  
(If bid is by a Corporation)

State License No. \_\_\_\_\_



**SECTION 00 52 01**  
**STANDARD AGREEMENT BETWEEN OWNER AND CONTRACTOR - AIA DOCUMENT A101-2017**

**DOCUMENTS**

**1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:**

**THE AMERICAN INSTITUTE OF ARCHITECTS  
DOCUMENT NO. A101  
STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR  
--STIPULATED SUM--  
2017 EDITION**

**RELATED REQUIREMENTS**

**2.01 SECTION 00 72 00 - GENERAL CONDITIONS OF THE CONTRACT - AIA A201-2017.**

**2.02 SECTION 00 73 00 - SUPPLEMENTAL GENERAL CONDITIONS.**

**SUPPLEMENTARY CONDITIONS**

**END OF SECTION**





# 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)

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

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

| Sample

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

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.

## 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:

Init.

(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 \_\_\_\_\_ Dollars and Zero Cents (\$ ), 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**

**§ 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:  
(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:

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



**§ 5.1.7.1.1** 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.)*

%

## **ARTICLE 6 DISPUTE RESOLUTION**

### **§ 6.1 Initial Decision Maker**

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

## § 6.2 Binding Dispute Resolution

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

*(Check the appropriate box.)*

- ☐ 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.)*

§ 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)*

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

- .5 Drawings

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

- .6 Specifications

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

- .7 Addenda, if any:

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

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

- .8 Other Exhibits:

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

Init.

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

☐ The Sustainability Plan:

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

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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**.9** Other documents, if any, listed below:

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

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

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

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

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

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

**SECTION 00 61 13**  
**PERFORMANCE AND PAYMENT BOND - AIA DOCUMENT A312-2010**

**DOCUMENTS**

**1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:**

**THE AMERICAN INSTITUTE OF ARCHITECTS  
DOCUMENT NO. A312  
PERFORMANCE AND PAYMENT BOND  
2010 EDITION**





# AIA<sup>®</sup> Document A312<sup>™</sup> – 2010

## Payment Bond

### CONTRACTOR:

(Name, legal status and address)

### SURETY:

(Name, legal status and principal place of business)

### OWNER:

(Name, legal status and address)

### CONSTRUCTION CONTRACT

Date:

Amount: \$ 0.00

Description:

(Name and location)

Sample

### BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

None

See Section 18

### CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

Signature:

### SURETY

Company: (Corporate Seal)

Signature:

Name and

Title:

(Any additional signatures appear on the last page of this Payment Bond.)

Name and

Title:

(FOR INFORMATION ONLY — Name, address and telephone)

### AGENT or BROKER:

### OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

### ADDITIONS AND DELETIONS:

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

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

**§ 1** The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

**§ 2** If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

**§ 3** If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

**§ 4** When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

**§ 5** The Surety's obligations to a Claimant under this Bond shall arise after the following:

**§ 5.1** Claimants, who do not have a direct contract with the Contractor,

- .1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- .2 have sent a Claim to the Surety (at the address described in Section 13).

**§ 5.2** Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

**§ 6** If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

**§ 7** When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

**§ 7.1** Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

**§ 7.2** Pay or arrange for payment of any undisputed amounts.

**§ 7.3** The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

**§ 8** The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

**§ 9** Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.



**§ 10** The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

**§ 11** The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

**§ 12** No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

**§ 13** Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

**§ 14** When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

**§ 15** Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

## **§ 16 Definitions**

**§ 16.1 Claim.** A written statement by the Claimant including at a minimum:

- .1 the name of the Claimant;
- .2 the name of the person for whom the labor was done, or materials or equipment furnished;
- .3 a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- .4 a brief description of the labor, materials or equipment furnished;
- .5 the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- .6 the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- .7 the total amount of previous payments received by the Claimant; and
- .8 the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

**§ 16.2 Claimant.** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

**§ 16.3 Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

**§ 16.4 Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

**§ 16.5 Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

**§ 17** If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

**§ 18** Modifications to this bond are as follows:

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_ *(Corporate Seal)*

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

Name and Title: \_\_\_\_\_

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

**SURETY**

Company: \_\_\_\_\_ *(Corporate Seal)*

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

Name and Title: \_\_\_\_\_

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



# AIA<sup>®</sup> Document A312™ – 2010

## Performance Bond

### CONTRACTOR:

(Name, legal status and address)

### SURETY:

(Name, legal status and principal place of business)

### OWNER:

(Name, legal status and address)

### CONSTRUCTION CONTRACT

Date:

Amount: \$ 0.00

Description:

(Name and location)

Sample

### BOND

Date:

(Not earlier than Construction Contract Date)

Amount: \$

Modifications to this Bond:

None

See Section 16

### CONTRACTOR AS PRINCIPAL

Company: (Corporate Seal)

Signature:

Name and

Title:

(Any additional signatures appear on the last page of this Performance Bond.)

### SURETY

Company:

Signature:

Name and

Title:

### OWNER'S REPRESENTATIVE:

(Architect, Engineer or other party:)

### ADDITIONS AND DELETIONS:

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

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

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

(FOR INFORMATION ONLY — Name, address and telephone)

### AGENT or BROKER:

**§ 1** The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

**§ 2** If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

**§ 3** If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

- .1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;
- .2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
- .3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

**§ 4** Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

**§ 5** When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

**§ 5.1** Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

**§ 5.2** Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

**§ 5.3** Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

**§ 5.4** Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

- .1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
- .2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

**§ 6** If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

- .1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
- .2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and
- .3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

#### § 14 Definitions

§ 14.1 **Balance of the Contract Price.** The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 **Construction Contract.** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 **Contractor Default.** Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 **Owner Default.** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 **Contract Documents.** All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

*(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)*

**CONTRACTOR AS PRINCIPAL**

Company: \_\_\_\_\_  
Signature: \_\_\_\_\_  
*(Corporate Seal)*

Name and Title: \_\_\_\_\_  
Address: \_\_\_\_\_

**SURETY**

Company: \_\_\_\_\_  
Signature: \_\_\_\_\_  
*(Corporate Seal)*

Name and Title: \_\_\_\_\_  
Address: \_\_\_\_\_

Init.

**SECTION 00 72 00**

**GENERAL CONDITIONS OF THE CONTRACT - AIA DOCUMENT A201-2017**

**DOCUMENTS**

- 1.01 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT ARE ATTACHED FOLLOWING THIS PAGE.**

**THE AMERICAN INSTITUTE OF ARCHITECTS**

**DOCUMENT NO. A201**

**GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION  
2017 EDITION**

**SUPPLEMENTARY CONDITIONS**

- 2.01 SECTION 00 73 00 - SUPPLEMENTAL GENERAL CONDITIONS.**







# AIA® Document A201® – 2017

## General Conditions of the Contract for Construction

### for the following PROJECT:

*(Name and location or address)*

Capstone Coweta Trails II - 4256  
Coweta, OK

### THE OWNER:

*(Name, legal status and address)*

Capstone at Coweta Trails II, LP  
3556 S. Culpepper Circle, Ste 4  
Springfield, MO 65804

### THE ARCHITECT:

*(Name, legal status and address)*

Wallace Architects, LLC  
302 Campusview Drive, Suite 208  
Columbia, MO 65201

### TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	OWNER
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13	MISCELLANEOUS PROVISIONS

### ADDITIONS AND DELETIONS:

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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.

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

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

### **§ 1.3 Capitalization**

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

### **§ 1.4 Interpretation**

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

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

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

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

### **§ 1.6 Notice**

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

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

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

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

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

Any use of, or reliance on, all or a portion of a building information model 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.

### **ARTICLE 3 CONTRACTOR**

#### **§ 3.1 General**

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

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

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

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

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

**§ 3.2.2** Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These

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

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

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

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

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

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

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

### **§ 3.4 Labor and Materials**

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

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

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

### **§ 3.5 Warranty**

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

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

### **§ 3.6 Taxes**

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

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

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

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

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

### **§ 3.7.4 Concealed or Unknown Conditions**

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

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

### **§ 3.8 Allowances**

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

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

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

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

**§ 3.9 Superintendent**

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

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

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

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

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

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

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

**§ 3.11 Documents and Samples at the Site**

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and 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 all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional,

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

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

### **§ 3.13 Use of Site**

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

### **§ 3.14 Cutting and Patching**

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

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

### **§ 3.15 Cleaning Up**

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

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

### **§ 3.16 Access to Work**

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

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

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

### **§ 3.18 Indemnification**

**§ 3.18.1** To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work,

provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

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

## **ARTICLE 4 ARCHITECT**

### **§ 4.1 General**

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

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

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

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

*(Paragraphs deleted)*

### **§ 4.2.4 Communications**

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

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

*(Paragraphs deleted)*

**§ 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.

**§ 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.

Notwithstanding any provision of this Agreement and any of its amendments to the contrary, Architect has no duty to Owner, Contractor, any of their subcontractors, agents, or assigns or to anyone else to inspect the Work for defects, for lack of quality or for lack of good workmanship. In the event that Architect observes any defects, lack of quality, or lack of good workmanship in the Work while Architect is on site, then Architect will raise the issue with the Owner and Contractor. However, by no means does this provision or the making of such an observation create any duty to inspect for, search out, or find any such defects, lack of quality, or lack of good workmanship. Owner hereby agrees to indemnify and hold harmless, and covenants not to sue, Architect, its owners, employees, contractors, agents, and assigns from any and all claims, demands, costs, expenses, lawsuits, attorney's fees, liability, judgments, and damages which arise or may arise from any defects, lack of quality or lack of workmanship in the Work or the lack of Architect to observe any defects, lack of quality, or lack of workmanship during any site visit or inspections.

## **ARTICLE 5 SUBCONTRACTORS**

### **§ 5.1 Definitions**

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

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

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

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

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

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

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

### § 5.3 Subcontractual Relations

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

### § 5.4 Contingent Assignment of Subcontracts

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

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

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

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

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

## ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

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

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

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

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors

shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

## **§ 6.2 Mutual Responsibility**

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

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

**§ 6.2.3** The 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.

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

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

### **ARTICLE 8 TIME**

#### **§ 8.1 Definitions**

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

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

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

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

#### **§ 8.2 Progress and Completion**

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

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

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

#### **§ 8.3 Delays and Extensions of Time**

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

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

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

### **ARTICLE 9 PAYMENTS AND COMPLETION**

#### **§ 9.1 Contract Sum**

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



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

## § 9.2 Schedule of Values

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

## § 9.3 Applications for Payment

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

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

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

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

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

## § 9.4 Certificates for Payment

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

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner that the Work has progressed to the point indicated. Such Certification shall be based on the Architect's limited observations at the site and on the data comprising the Contractor's Application for Payment. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified.

However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made any inspections beyond the monthly inspection, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

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

**§ 9.5.1** The Architect may 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.

#### § 9.8 Substantial Completion

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

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

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will review the Work 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 review 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 written notice that the Work is ready for final review and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such review and, when the Architect finds that final payment is appropriate to make, 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 limited on-site visits and limited inspections, the Work has been completed 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. However, the issuance of a final Certificate for Payment will not be a representation that the Architect has (1) made any inspections beyond the monthly inspection, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

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

**§ 9.10.3** If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the

Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

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

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

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

## **ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

### **§ 10.1 Safety Precautions and Programs**

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

### **§ 10.2 Safety of Persons and Property**

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

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

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

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

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

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

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

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

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

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

**§ 10.3 Hazardous Materials and Substances**

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

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

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

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

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

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

#### § 10.4 Emergencies

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

### ARTICLE 11 INSURANCE AND BONDS

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

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

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

§ 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.

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

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

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

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

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

### § 13.5 Interest

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

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

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

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

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

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' 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.

### **§ 15.1.7 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 00 73 00**  
**SUPPLEMENTAL GENERAL CONDITIONS**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. These Supplementary Conditions amend and supplement the General Conditions of The Contract For Construction and other provisions Contract Documents as indicated below. Provisions that are not so amended or supplemented remain in full force and effect.
- B. The terms used in these Supplementary Conditions that are defined in the General Conditions have the meanings assigned to them in the General Conditions.

**1.02 SUBSTANTIAL COMPLETIONS**

- A. General:
  - 1. Partial Substantial Completions may be issued by building or by floor to allow occupancy of a building, or units, and to aid in tax credit purposes. This will be indicated at the pre-construction meeting, if applicable. Partial substantial completions will not establish the starting date for the Contractor's one year latent defects period.
  - 2. Final Substantial Completion must be issued for the entire project and requires review and approval by Oklahoma Housing Finance Agency (OHFA). Final Substantial Completion will establish the starting date for the Contractor's one year latent defects period for the entire project.
  - 3. The value of incomplete or defective work items listed on the Architect's Substantial Completion Punchlist shall be determined and included on the Certificate of Substantial Completion. This monetary value shall be escrowed until such time as each respective work item has been completed or corrected to the satisfaction of the Owner, OHFA, and Architect.
- B. Required Documents:
  - 1. Architect's Punchlist Inspection Report.
  - 2. Certificate of Occupancy.
  - 3. Completed AIA Document G704 - Certificate of Substantial Completion.
- C. Scheduling:
  - 1. Scheduling for punchlist inspections and pay request meetings shall coincide to the fullest extent possible for best use of time for all parties involved. The schedule should be followed as presented at the pre-construction meeting. However, in the event the schedule must change, such changes shall be made known and coordinated by the Contractor and Architect with OHFA.

**1.03 RETAINAGE:**

- A. General:
  - 1. Retainage withheld from payments owed to the Contractor during construction shall be in accordance with the construction contract provisions.
  - 2. Where OHFA interim financing is provided, and construction retainage is in the amount of 10%, said retainage may be reduced to 5% (with prior approval) once construction for the entire project reaches 90% completion. This reduction in retainage cannot occur as a result of completion of construction phases, individual building completion, or completion of individual floors of buildings. This reduction in retainage requires prior consent of OHFA, and such consent can only be given if there are no major outstanding issues or no pending Change Orders.

**1.04 CHANGE ORDERS:**

- A. General:
  - 1. Change Orders to the construction contract shall be addressed as construction progresses, rather than being saved until the end of the project.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**



**SECTION 01 00 00**  
**GENERAL REQUIREMENTS**

**PART 1 - GENERAL REQUIREMENTS - CONTRACT**

**1.01 SCOPE OF WORK**

- A. The work included under these Contract Documents consists of furnishing all items, materials, operations, or methods listed, indicated, or scheduled on the Drawings and/or in these Specifications, including all labor, materials, equipment, transportation, temporary facilities, services, and incidentals, necessary and required for the construction and completion of the project named on the title in accordance with the Contract Documents.

**1.02 CONTRACT DOCUMENTS**

- A. Contract Specifications: The General Requirements shall apply to every division of these specifications. All specification instructions are directed to the Contractor and the inclusion of any work by mention, note, or itemizations, however brief, implies the Contractor shall provide same, unless specifically directed otherwise. Where a specific Contractor is named, said contractor shall be responsible for and provide work so designated. In specifying an item by manufacturer's name and/or catalog number, such items shall be provided complete with all the standard devices and accessories as indicated in the latest edition of the manufacturer's catalog or brochure published at date of invitation to submit proposals, unless specifically stated otherwise.
- B. Contract Drawings: The Contract Drawings, or Plans, on which the Proposal and Contract are based, are listed on the cover sheet of the Plans.
  - 1. In accordance with AIA Document A201 "General Conditions Of The Contract For Construction", shop drawing submittals provided for review, form no part of the Contract Documents, being for the use of the Contractor, subcontractors, and/or suppliers and manufacturers only.

**1.03 GENERAL CONDITIONS**

- A. AIA Document A201 "General Conditions Of The Contract For Construction", 2017 edition, hereafter referred to as the "AIA General Conditions", is hereby made a part of the Specifications. Contractor shall consult this document and become thoroughly familiar with its contents before submitting his proposal.
  - 1. Amendments to the AIA General Conditions: The AIA General Conditions are hereby supplemented and amended. Where any article is amended, deleted, or superseded hereby, unaltered provisions of such article shall remain in effect.
  - 2. Article 1 - Contract Documents: Supplement Article 1.1, Definitions, as follows:
    - a. When a word, such as "approved", "proper", "satisfactory", "equal" and "as directed" is used, it implies such reference is to the Architect's specified review and directions.
    - b. "Provide" means furnish and install.
  - 3. Article 3 - Contractor: Supplement Subparagraph 3.5.1, as follows:
    - a. Contractor warrants to Owner and Architect that on receipt of notice from either of them, within the period of one (1) year following date of Substantial Completion, that for defects in materials and/or workmanship which have appeared in the work, the Contractor will promptly correct such defects to the state of condition originally required by the Contract Documents at Contractor's expense.
  - 4. Article 6 - Separate Contracts: Supplement Paragraph 6.2 Mutual Responsibility of Contractors, as follows:
    - a. Contractor shall assume general coordination and direction of the Project. Each subcontractor shall cooperate with other subcontractors on the work and install his work in sequence to facilitate and not delay the installation of such other subcontractors. The Architect is not the coordinator, nor the expeditor of the work of the various contracts.

**1.04 SPECIAL PROVISIONS**

- A. Insurance:
  - 1. Contractor shall purchase and maintain insurances required by AIA General Conditions, Paragraph 11.1 in the following minimum amounts:
    - a. Comprehensive General Liability \$1,000,000.00 each person and \$1,000,000.00 each occurrence.

- b. Property Damage, \$1,000,000.00 each occurrence, \$1,000,000.00 aggregate.
  - c. Comprehensive Automobile Liability, \$1,000,000.00 each person, \$1,000,000.00 each occurrence, including Property Damage of \$1,000,000.00 each occurrence.
- 2. Contractor shall require subcontractors to provide and maintain same insurance with same minimum limits.
- 3. Property Insurance (Builder's Risk) required under AIA General Conditions, Subparagraph 11.4.1, shall be purchased and maintained by the Contractor for the full insurable value of the entire work.
- B. Wage Rate: Based on information received from the Owner, prevailing wages do not apply to this job and, therefore, are not included.
- C. Housing and Urban Development (HUD) Section 3 Requirements:
  - 1. Based on information received, Section 3 Requirements do not apply to this job and, therefore, are not included.
- D. Locations, Lines, and Levels:
  - 1. The Owner shall furnish evidence of the locations of property lines, restrictions and a permanent benchmark. Contractor shall establish location of building on property and establish and maintain all other grades, line, levels and bench marks; check and compare all drawings, verifying grades, lines, levels and dimensions indicated thereon, and report all inconsistencies to the Architect and receive his instructions before commencing work.
  - 2. The Contractor shall provide and maintain well-built batter boards at corners and establish and safeguard bench marks in at least two widely separated places and, as work progresses, establish bench marks at each building level and establish exact locations on partitions on rough floors as a guide to trades.
- E. Building Permit:
  - 1. The Contractor shall be responsible for obtaining and payment for a Building Permit.
  - 2. The Contractor and/or his subcontractors shall be responsible for obtaining and paying for individual Plumbing, Electrical, Mechanical, and any other such permits and/or licenses as required by the local authorities.
- F. Contractor shall be responsible for verifying measurements at the building before ordering material or doing work. No extra compensation will be allowed for difference between actual dimensions and measurements indicated on the drawings. Any differences found shall be submitted to the Architect and Owner for consideration before proceeding with the work.
- G. The Geotechnical Report, which follows, is included for reference by the Contractor and other interested parties. Neither the Owner, nor the Architect, will assume any responsibility or liability for any information contained therein, or for assumptions made from said information.
- H. Based on information received, (Phase 1) Requirements do not apply to this project, and therefore are not included.
- I. Special Inspections: The Contractor, his subcontractors, and material suppliers shall comply with construction and fabrication provisions and allow all required inspections in accordance with the "Special Inspections" section of the prevailing Building Code(s).
- J. Regulated Substances and Materials: No portion of the Construction Documents call for or require the use of the following regulated substances and Contractor shall not use products containing these regulated substances.:
  - 1. Asbestos in any form.
  - 2. Urea-formaldehyde foam insulation.
  - 3. Any other chemical, material or substance the proposed or actual use of which is prohibited by local, State, or Federal regulation or law.

#### **1.05 SPECIAL CONSTRUCTION REQUIREMENTS**

- A. The Contractor shall, by site visit prior to bid, determine the extent and nature of work involved in this project based on a visual inspection.
- B. All reasonable attempts have been made to cover the scope of work involved. Should the Contractor discover during the course of construction, repairs, etc., that other conditions exist which might require extra work, he shall immediately call this to the attention of the Architect. Once the Architect, Owner, and Contractor are in agreement on the extent and nature of said extra work, the General Contractor shall within fourteen (14) calendar days provide an

estimated cost for extra work. Once extra cost has been reviewed and accepted by Owner and Architect a Change Order shall be processed and signed by all parties. Extra cost work done by the Contractor without following the aforementioned procedure or without providing the Owner with anticipated costs prior, will result in no payment for said work.

- C. The Contractor shall at all times during the course of construction, and/or repair work protect all existing furnishings, finishes, construction, etc., which are to remain or have been delivered on site. Contractor shall be liable for losses for damage to items of that nature and shall repair to previous original condition or replace as situation dictates.
- D. All fees for disposal are to be paid for by the Contractor. The site shall remain clean at all times from construction and demolition debris.
- E. The Contractor shall fill and level with topsoil all areas of site rutted or cut up during the course of the Contract, then sod or seed as per the Contract Documents.
- F. Existing sidewalks, street curbs, inlets, or other site improvements damaged during the course of the contract, but which previously were scheduled to remain, shall be replaced as necessary.

## **PART 2 - GENERAL REQUIREMENTS OF WORK**

### **2.01 DRAWINGS**

- A. Do not scale Mechanical and Electrical Drawings for dimensions. Accurately lay-out such work from dimensions indicated on Contract Drawings. Consult Architect for interpretations concerning discrepancies or locations of equipment.
- B. Consult all Drawings for miscellaneous items of each trade and provide same as indicated for a complete installation in accordance with manufacturer's product specifications.

### **2.02 SUBMITTALS**

- A. Submittals shall illustrate principal component parts, methods of assembly, mechanical and electrical connections, accessories and relationship to the building components. They shall consist of Product data, material data sheets, samples, and/or shop drawings required for the Architect's review that the correct products, assemblies, and quantities will be installed.
- B. All Submittals shall be reviewed and approved – by stamp and/or signature - by the Contractor prior to submission to the Architect. Submittals received by the Architect and not first approved by the Contractor will be returned without review or processing.
- C. Items generally requiring Submittals include, but are not limited to:
  - 1. Concrete Mix design, materials, and accessories.
  - 2. Cast Underlayment.
  - 3. Masonry units, mortar materials, and accessories.
  - 4. Fabricated metal items, hangers, ledges, and shapes.
  - 5. Rough Carpentry; grade substantiation for dimension lumber, and fasteners.
  - 6. Shop-Fabricated Wood Trusses for roof or floor.
  - 7. Finish Carpentry; trim profiles.
  - 8. Ornamental Simulated Woodwork.
  - 9. Thermal Protection.
  - 10. Weather Barriers
  - 11. Roofing Materials and accessories.
  - 12. Siding and Soffit Materials.
  - 13. Firestopping.
  - 14. Joint Protection.
  - 15. Wood Doors.
  - 16. Windows.
  - 17. Finish Hardware.
  - 18. Gypsum Board.
  - 19. Resilient Flooring and accessories.
  - 20. Carpeting and accessories.
  - 21. Paints, Stains, and Coatings.
  - 22. Signage.
  - 23. Toilet and Bathroom Accessories.
  - 24. Fire Protection Specialties.
  - 25. Postal Specialties.

26. Closet and Storage Shelving.
27. Residential Appliances.
28. Window Treatments.
29. Residential Cabinets and Countertops.
30. Elevators.
31. Fire Suppression Sprinkler Systems.
32. Plumbing Equipment, Fixtures, and accessories.
33. HVAC Systems and accessories.
34. Electrical Systems, equipment, and fixtures.
35. Life Safety Systems.
36. Termite Control.
37. Fences and Gates.
38. Site Furnishings.

### **2.03 SELECTION AND REVIEW OF MATERIALS**

- A. Where materials or equipment require the review of the Architect, secure such review before procurement.
- B. Where colors and/or patterns are to be selected by Architect and/or the Owner, request such selection in ample time for procurement.
- C. The aesthetic values of every material and installation, such as shape, proportion, texture, finish and color, will be an important consideration to the Owner and/or Architect, and decisions concerning same shall be final.

### **2.04 CONTRACTOR'S MEANS AND METHODS**

- A. The Architect shall not be responsible for, nor have control over, nor charge of construction means, procedures, methods, techniques, or for safety programs or precautions in conjunction with the project construction. The Contractor shall be solely responsible for these under the Construction Contract.
- B. The Architect shall not be responsible for the Contractor's failure to carry out work in accordance with the Contract Documents. The Architect shall not have control over, nor in any way be responsible for, the Contractor's scheduling, or acts, or omissions of the Contractor, subcontractors, or their agents or employees, or of any other persons performing portions of the work.
- C. The Contractor shall initiate, maintain, and supervise all safety precautions and programs in conjunction with the performance of the Contract, and shall be responsible for same.
- D. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of public authorities dealing with safety of persons or property or their protection from damage, injury, or loss. The Contractor shall also give notices in accordance with the foregoing.
- E. The Contractor shall construct and maintain temporary drainage and pump as necessary to keep site and excavations free from water, remove ice and snow as necessary for safety and proper execution of his work, provide cover and protection for his work from inclement weather and brace all construction to prevent damage from wind.
- F. Keep covered all materials, cavities and holes subject to damage by falling materials or deposits of water, snow or ice.
- G. Hot and Cold Weather protocols, where applicable or dictated by manufacturer's instructions, shall be adhered to.
- H. Transport, handle, store, and erect materials in a manner to keep them free from damage.
- I. Support no runways, ramps, or construction equipment on, or transport over, any surface or assembly subject to displacement, disfigurement, or other damage.
- J. Protect work in place that requires job-finishing, until such finishing has been completed.
- K. Protect work previously placed by suitable coverings during installation of subsequent work. Clean off any foreign materials accidentally deposited on finish surfaces and, where such would stain, corrode or otherwise disfigure, clean immediately with material that will not damage finished work.
- L. Where finished floors in place are subject to ongoing construction damage, cover traffic areas with suitable protective coverings until project acceptance.

## **2.05 TEMPORARY EQUIPMENT**

- A. Contractor shall provide temporary hoists, ladders, scaffolding, shoring, bracing, runways, walks, ramps, and other equipment or construction, required for proper progress of his work and remove same at completion of work.

## **2.06 APPROPRIATE MATERIALS AND INSTALLATION**

- A. Prior to submitting proposal, Contractor, his subcontractors, and material suppliers shall review the Contract Documents and, should any material and/or its installation be indicated or specified in a manner not approved by the material manufacturer, notify the Architect and receive his instructions. Failing to do so, Contractor shall provide other equivalent materials suitable for the installation as selected by the Architect, or if not discovered until after installation, Contractor shall replace materials with such other equivalent, suitable and selected materials, and in either event, at no added cost to Owner.
- B. All materials shall be new unless otherwise specifically covered by the Contract Documents or approved by the Owner.
- C. Materials or products specified by name of manufacturer, brand or trade name, and/or catalog reference in the Contract Documents, shall be deemed to establish standards of quality and style, and not to be proprietary in nature. Any article or material, which will adequately perform the duties imposed by the general design, will be considered equal, providing it is of equal substance and function.
- D. If Contractor proposes construction methods other than those shown or specified, complete drawings and engineering notes shall accompany the request. Contractor shall follow the Submittal process as outlined, for review by the Architect, Architect's consultants, and/or Owner's consultants.

## **2.07 RECEIPT AND STORAGE OF MATERIALS**

- A. On receipt of materials check for in-transit damage promptly, should it be necessary to replace any damaged materials prior to installation.
- B. Deliver materials and equipment to project site in manufacturer's original packaging. Keep labels intact until final cleaning. Where items are to be job-assembled, label, tag, mark or otherwise properly identify each assembled component part until incorporated in the work.
- C. Store materials in a manner to prevent deterioration, staining, soiling and intrusion of foreign materials. Provide waterproof, well-ventilated enclosures for materials subject to deterioration by dampness. Adequately protect those materials subject to damage by freezing and frost.

## **2.08 CLOSING-IN WORK**

- A. Contractor shall notify his subcontractors, Owner and all contractors and subcontractors under separate contract to the Owner, when he is ready for them to install their portions of the work and see that they comply within a reasonable period of time. Do not enclose nor cover any piping, wiring, ducts, equipment, or other items until proper tests and inspections have been made by Authorities having Jurisdiction, or observed by the Architect.

## **2.09 WARRANTIES**

- A. Prior to being eligible for final payment, Contractor shall deliver to Architect, all Manufacturer's and special warranties specified in the Contract Documents for materials, equipment, and installations. These shall be compiled in a book and must include the name, address and phone number of the installation subcontractor, the name, address and phone number of the supplier and the printed warranty on at each model of each of the following items:
  - 1. Water Heaters.
  - 2. Heating and Air Conditioning systems.
  - 3. Appliances; including, but not limited to: range, range hood, refrigerator, microwave, and washers and dryers.
  - 4. Siding and Soffit materials.
  - 5. Gutters and Downspouts.
  - 6. Roofing system.
- B. The Contractor shall provide a one (1) year warranty (Guarantee) from the date of Final Completion and acceptance by the Owner, during which time he shall make needed repairs and

replacements of defective workmanship or materials, or correction of non-conforming work as outlined in paragraph 12.2.2 of the Contract General Conditions.

## **2.10 TEMPORARY FACILITIES**

- A. Field Office: Contractor shall erect and maintain in good condition during progress of work a weatherproof field office building (adequate size trailer also acceptable) for use of General Contractor and Architect's Representative. Provide such building with heat, electric light, telephone and lockable door.
- B. Toilet Facilities: Contractor shall provide temporary, exterior, completely closed latrine. Provide necessary supplies and keep clean at all times.
- C. Electrical Service: Contractor shall arrange and pay for temporary metering electrical service to his Field Office and Project Site sufficient for his needs throughout the construction process. Use of electrical service in buildings is not permitted, unless previously agreed to by the Owner. Provide lights and electrical extensions to locations necessary for proper and safe operations and permit other contractors to use and remove the same at his own expense. The General Contractor shall pay for all temporary electrical service consumed from start of project through Final Closeout.
- D. Water: Contractor may use water from existing hose bibbs or extend lines therefrom at their own expense. Contractor shall pay for and provide a temporary water meter at the connection and shall pay for all water consumed. Contractor is fully responsible for monitoring all water consumption to prevent "wasteful" use and to prevent connection/use from other connection locations.
- E. Heat: Contractor shall provide auxiliary heat necessary to prevent damage from dampness and cold and to provide proper climate conditions as necessary to prohibit damage to installed materials. Contractor shall pay for all fuels (i.e., propane, LP, Natural gas, etc.) and/or electrical service consumed for heating until building is completed.
- F. Telephone: Contractor shall provide temporary telephone for use by all trades and by Architect. Contractor shall pay for all local calls, but shall be reimbursed for long-distance calls by those making same.

## **PART 3 - PROJECT CLOSE OUT**

### **3.01 GENERAL**

- A. Owner may place and install equipment during the progress of the building or occupy portions finished before the entire completion of the work. Such occupancy will not in any way evidence completion or acceptance of any part of the work.
- B. Record Drawings: Maintain a complete set of blue/black-line prints of Contract Drawings, Specifications, and shop drawings for record mark-up purposes throughout the Contract Time. Mark-up drawings and specifications during course of the work to show changes and actual installation conditions, sufficient to form a complete record for Owner's purposes. Give particular attention to work which will be concealed and difficult to measure and record at a later date, and work which may require servicing or replacement during life of project. Require entities marking prints to sign and date each mark-up. Bind prints into manageable sets, with durable paper covers, appropriately labeled.
- C. Maintenance Manuals: Provide 3-ring vinyl-covered binders containing required maintenance manuals, properly identified and indexed. Include operating and maintenance instructions, expanded to cover emergencies, spare parts, warranties, inspection procedures, diagrams, safety, security, and similar appropriate data for each system or equipment item.

### **3.02 ENERGY AUDIT TESTING**

- A. When required, perform duct leakage and blower door testing in conformance with the International Energy Conservation Code (IECC- current edition) Energy Efficiency requirements.
  - 1. Tests shall be performed on All Dwelling Units, unless noted otherwise.
  - 2. Submit required Energy Audit Report to Architect for review.
  - 3. Post compliance certificate in each Dwelling Unit, as required.

### **3.03 INSPECTION - PREREQUISITES**

- A. Comply with the General Conditions and complete the following before requesting Architect's inspection of the work, or designated portion thereof, for substantial completion.



- B. Submit executed warranties, workmanship bonds, maintenance agreements, inspection certificates, and similar required documentation for specific units of work, enabling Owner's un-restricted occupancy and use.
- C. Submit record documentation, maintenance manuals, tools, spare parts, keys, and similar operational items.
- D. Operator Instructions: Require each Installer of systems requiring continued operation/maintenance by Owner's maintenance personnel, to provide on-location instruction to Owner's personnel, sufficient to ensure safe, secure, efficient, non-failing utilization and operation of systems.
- E. Final Cleaning: At closeout time, clean or re-clean entire work to normal level for "first class" maintenance/cleaning of building projects of a similar nature. Remove non-permanent protection and labels, polish glass, clean exposed finishes, touch-up minor finish damage, clean or replace filters of mechanical systems, remove debris and broom-clean non-occupied spaces, sanitize plumbing/food service facilities, clean light fixtures and replace burned-out/dimmed lamps, sweep and wash paved areas, police yards and grounds, and perform similar cleanup operations needed to produce a "clean" condition as judged by Architect.

#### **3.04 INSPECTION PROCEDURES**

- A. Upon receipt of Contractor's request, Architect will either proceed with inspection or advise Contractor of prerequisites not fulfilled.
- B. Following initial inspection, Architect will either prepare a Certificate of Substantial Completion, or advise Contractor of work which must be performed prior to issuance of said certificate; and repeat inspection when requested and assured that work has been substantially completed. Results of completed initial inspection will form initial "punch-list" for final acceptance.
- C. Re-inspection Procedure: Upon receipt of Contractor's notice that work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, Architect will re-inspect work. Upon completion of re-inspection, Architect will either recommend final acceptance and final payment, or advise Contractor of work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

**END OF SECTION**



**SECTION 01 00 10  
GEOTECHNICAL REPORT**

**DOCUMENTS**

**1.01 APPLICABLE TO THIS CONTRACT, AND ATTACHED FOLLOWING THIS PAGE IS:**

**GEOTECHNICAL REPORT  
ECS SOUTHWEST, LLC  
39 Pages Total  
08/ 26/ 2022**





# ECS Southwest, LLP

Geotechnical Engineering Report

Coweta Trails Phase II

11954 S 273<sup>rd</sup> E Avenue  
Coweta, Oklahoma

ECS Project Number 58:1518

August 26, 2022





## ECS SOUTHWEST, LLP

Geotechnical • Construction Materials • Environmental • Facilities

"Setting the Standard for Service"

Oklahoma Firm CA #4705

August 26, 2022

Mr. Dean L. Carlson, P.E.  
Carlson Consulting Engineers, Inc.  
7068 Ledgestone Commons  
Bartlett, TN 38133

ECS Project No. 58:1518

Reference: Geotechnical Engineering Report  
Coweta Trails Phase II  
11954 S 273<sup>rd</sup> E Avenue  
Coweta, Oklahoma

Dear Mr. Carlson:

ECS Southwest (ECS) has completed the subsurface exploration, laboratory testing, and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our agreed to scope of work. This report presents our understanding of the geotechnical aspects of the project along with the results of the field exploration and laboratory testing conducted, and our design and construction recommendations.

It has been our pleasure to be of service to Carlson Consulting Engineers, Inc. during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during construction phase operations as well to verify subsurface conditions assumed for this report. Should you have any questions concerning the information contained in this report, or if we can be of further assistance to you, please contact us.

Respectfully submitted,

ECS Southwest, LLP

  
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## **APPENDICES**

### **Appendix A – Drawings & Reports**

- Site Location Diagram
- Boring Location Diagram
- Generalized Subsurface Soil Profile A-A'
- Clay Plug Detail at Trench

### **Appendix B – Field Operations**

- Reference Notes for Boring Logs
- Subsurface Exploration Procedures: Standard Penetration Testing (SPT)
- Boring Logs B-01 to B-09

### **Appendix C – Laboratory Testing**

- Laboratory Testing Summary



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## EXECUTIVE SUMMARY

This Executive Summary is intended as a very brief overview of the primary geotechnical conditions that are expected to affect design and construction. The following summarizes the main findings of the exploration, particularly those that may have a cost impact on the planned development. Further, our principal foundation recommendations are summarized. Information gleaned from the executive summary should not be utilized in lieu of reading the entire geotechnical report.

- The planned project is understood to be a three-story senior living apartment with a building footprint of approximately 19,146 square feet and is assumed to consist of structural steel/masonry and/or wood frame construction. Anticipated maximum structural loads are assumed to be column and wall loading of 100 kips and 6 kips/foot, respectively. We have also assumed the structure will have a finished floor elevation at or near existing grade.
- The planned structure may be supported on a shallow foundation system consisting of spread footings with conventional slab on grade, provided the subgrade is improved and prepared as outlined in this report. A reinforced slab with grade beams (monolithic slab/BRAB) or post-tensioned slab on grade may also be used.
- Should a conventional slab on grade be used, subgrade improvements of the highly plastic clay soils are necessary below the planned structure to reduce the potential for vertical movements. Specific details on addressing these highly plastic clay soils are presented in the body of the report.
- Pavements should be supported directly on stabilized subgrades or a layer of aggregate base upon subgrades that are evaluated and prepared as outlined in this report.
- It is recommended that ECS conduct a geotechnical review of the project plans (prior to issuance for construction) to check to see that ECS' geotechnical recommendations have been properly interpreted and implemented.
- To prevent misinterpretation of ECS recommendations, ECS should be retained to perform quality control testing and documentation during construction of the earthwork and foundations for the project.

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## **1.0 INTRODUCTION**

The purpose of this study was to provide geotechnical information for the design and construction of the foundations, floor slabs, and pavements for the planned Coweta Trails Phase II project located at 11954 S 273<sup>rd</sup> E Avenue in Coweta, Oklahoma. The recommendations developed for this report are based on project information provided by the client.

Our services were provided in accordance with our Proposal No. 58:2082-GP, dated July 8, 2022, authorized by the client by providing the signed contract on July 21, 2022, which includes our agreed to terms and conditions.

This report contains the procedures and results of our subsurface exploration and laboratory testing programs, review of existing site conditions, engineering analyses, and recommendations for the design and construction of the project.

The report includes the following items.

- A brief review and description of our field and laboratory test procedures and the results of testing conducted.
- A review of surface topographical features and site conditions.
- A review of area and site geologic conditions.
- A review of subsurface soil stratigraphy with pertinent available physical properties.
- A final copy of our soil test borings.
- Recommendations for site preparation and construction of compacted fills, including an evaluation of on-site soils for use as compacted fills.
- Recommended foundation type.
- General recommendations for pavement design.

## **2.0 PROJECT INFORMATION**

### **2.1 PROJECT LOCATION/CURRENT SITE USE**

The project is located at 11954 S 273<sup>rd</sup> E Avenue in Coweta, Oklahoma. The location is depicted in Figure 2.1.1 as shown below.



**Figure 2.1.1.1. Site Location**

ECS reviewed aerial photographs of the subject site dated 1995 to 2022. Since February 1995, the site appears to have been a vacant, grassed property. At some time between May and September 2020 it appears construction of the existing Coweta Trails facility adjacent to the south had commenced and this site was used for a construction staging area. At some time between February 2021 and June 2022, it appears the construction of the existing Coweta Trails facility was completed. Since that time, the site has remained relatively unchanged.

Currently the site is a vacant, grassed property with what appears to be a drainage channel along the northeast perimeter. The topography of the site generally slopes down from west to east with maximum and minimum boring elevations of approximately EL 665 feet and EL 662 feet, respectively. The ground surface elevations noted in this report were obtained from Google Earth and have been rounded to the nearest foot.

## **2.2 PROPOSED CONSTRUCTION**

The following information explains our understanding of the planned development including the proposed buildings and related infrastructure.

<b>SUBJECT</b>	<b>DESIGN INFORMATION / ASSUMPTIONS</b>
Building Footprint	Approximately 19,146 square feet in plan view
# of Stories	Three-story, above grade
Usage	Senior Apartments
Framing (assumed)	Structural steel/masonry and/or wood frame
Column Loads (assumed)	100 kips (Full Dead and Live Load) maximum
Wall Loads (assumed)	6 kips per linear foot (klf) maximum

SUBJECT	DESIGN INFORMATION / ASSUMPTIONS
Lowest Finish Floor Elevation	Unknown, assumed no more than 2 feet below or above existing grades

We also understand that associated parking/drive areas will be constructed. *If ECS' understanding of the project is not correct, especially if the structural loads are different, please contact ECS so that we may review these changes and revise our recommendations, as appropriate.*

### 3.0 FIELD EXPLORATION AND LABORATORY TESTING

Our exploration procedures are explained in greater detail in Appendix B including the insert titled Subsurface Exploration Procedures. Our scope of work included drilling nine (9) borings. The boring locations were selected by ECS based on information provided by the client and identified in the field by the private utility locator using boring GPS coordinates generated by ECS. The approximate as-drilled boring locations are shown on the Boring Location Diagram in Appendix A.

#### 3.1 SUBSURFACE CHARACTERIZATION

The subsurface conditions encountered were generally consistent with published geological mapping. The following sections provide generalized characterizations of the soil strata encountered during our subsurface exploration. For specific subsurface information refer to the boring logs in Appendix B.

Approximate Depth of Bottom of Strata Below Grade	Elevation <sup>(1)</sup> (ft)	Stratum	Material Description	Consistency / Density
6 inches	---	Cover	Topsoil	--
16 to 17 feet	Elevation 647 to 645	I	(CL) LEAN CLAY and LEAN CLAY WITH SAND, various shades of brown, orange, gray, and black	Firm to Hard
18.5 <sup>(2)</sup> feet	Elevation 644	II <sup>(3)</sup>	(WR) WEATHERED LIMESTONE, light brown	Very Hard

Notes:

- (1) Elevations are approximate.
- (2) Depth to deepest boring termination depth.
- (3) Auger refusal was encountered in/on Stratum II in the building borings only at depth of approximately 16 to 18.5 feet.

Please refer to the attached boring logs and laboratory data summary for this field exploration for a more detailed description of the subsurface conditions encountered in the borings as the stratification descriptions above are generalized for presentation purposes.

#### 3.2 GROUNDWATER OBSERVATIONS

Water levels were measured in our boring logs in Appendix B. Groundwater was not observed in the borings at the time of our exploration and is indicated on the boring logs as "dry".

Variations in the long-term water table may occur as a result of changes in precipitation, evaporation, surface water runoff, construction activities, and other factors.

### 3.3 LABORATORY TESTING

The laboratory testing consisted of selected tests performed on samples obtained during our field exploration operations. Classification and index property tests were performed on representative soil samples. Testing performed include moisture content, Atterberg Limits, percent passing the No. 200 sieve.

Samples were visually classified on the basis of texture and plasticity in accordance with ASTM D2488 Standard Practice for Description and Identification of Soils (Visual-Manual Procedures) and including USCS classification symbols, and ASTM D2487 Standard Practice for Classification for Engineering Purposes (Unified Soil Classification System (USCS)). After classification, the samples were grouped in the major zones noted on the boring logs in Appendix B. The group symbols for each soil type are indicated in parentheses along with the soil descriptions. The stratification lines between strata on the logs are approximate; in situ, the transitions may be gradual.

## 4.0 DESIGN RECOMMENDATIONS

### 4.1 POTENTIAL VERTICAL MOVEMENTS

The intent of recommendations contained in this report are provided in order to reduce the potential risk associated with the shrink/swell tendencies of the on-site expansive soil, should a conventional slab on grade be used.

The majority of clay soils encountered in the borings have a high expansion potential. Based on our Atterberg limits laboratory test results and experience with similar soils, we estimate potential vertical soil movements (PVM) of the highly expansive soils encountered in the borings of up to about 3 inches, based on dry moisture conditions. These potential movements reflect moisture changes in the soil that can occur over the life of the structure and after construction is complete. The actual movements could be greater if poor drainage, ponded water, and/or other unusual sources of moisture are allowed to saturate the soils beneath the structure after construction.

### 4.2 SUBGRADE IMPROVEMENTS

In order to reduce the risk associated with future movements of a conventional slab on grade, we recommend the following general building pad subgrade improvements to reduce the PVM to approximately 1 inch. Please note, these recommendations are the minimum requirements to reduce potential movements below the floor slab due to expansion potential. If a monolithic slab/BRAB or post-tensioned slab is used, subgrade improvements are not required.

Options	Depth of Select Fill (feet)	Depth of Moisture Conditioning (feet)	Total Depth of Improved Zone (feet)	Estimated PVM (inch)
Option 1	2.5	---	2.5	1
Option 2	2	2	4	1
Option 3	---	5	5	1

The subgrade improvements should extend at least 5 feet beyond the edge of the building pads and include any flatwork sensitive to movements such as sidewalks or pavements. Exterior perimeter footing/grade beam backfill should consist of moisture conditioned clay soil. Please refer to the “Material Specifications” section of this report for more details.

These design parameters assume that positive drainage will be provided away from the structures and with moderate irrigation of surrounding lawn and planter areas with no excessive wetting or drying of soils adjacent to the foundations. Greater potential movements could occur with extreme wetting or drying of the soils due to ponding of water, plumbing leaks or lack of irrigation. Recommendations for earthwork operations are found in the “Site Construction Recommendations” portion of this report.

#### 4.3 FOUNDATIONS

Provided the subgrades are improved and structural fills are prepared as recommended in this report, the proposed structures can be supported by conventional shallow foundations including column footings and continuous wall footings. We recommend the foundation design use the following parameters:

Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure <sup>(1)</sup>	3,000 psf	3,000 psf
Acceptable Bearing Soil Material	Natural Soil or Compacted Fill	Natural Soil or Compacted Fill
Minimum Width	24 inches	18 inches
Minimum Footing Embedment Depth (below slab or finished grade) <sup>(2)</sup>	24 inches	24 inches
Estimated Total Settlement <sup>(3)</sup>	Less than 1- inch	Less than 1- inch
Estimated Differential Settlement <sup>(4)</sup>	Less than ¾ inches between columns	Less than ¾ inches per 30 linear feet

Notes:

- (1) Net allowable bearing pressure is the applied pressure in excess of the surrounding overburden soils above the base of the foundation.
- (2) For bearing considerations and frost penetration requirements.
- (3) Based on our assumed structural loads. If final loads are different, ECS must be contacted to update foundation recommendations and settlement calculations.
- (4) Based on maximum loads and variability in borings. Differential settlement can be re-evaluated once the foundation plans are more complete.

**Monolithic Slab/BRAB:** Should improving the subgrade in order to use conventional shallow foundations and slab on grade be cost prohibitive, foundations consisting of a reinforced slab with grade beams (monolithic slab/BRAB) under load bearing walls could also be used to support the proposed structures.

The reinforced slab may be designed using a soil modulus of subgrade reaction of 125 pci and the grade beams or spread footings may be design for a net allowable soil bearing pressure of 3,000



psf bearing on newly placed and compacted select fill or natural soils that were encountered in the borings.

If a monolithic slab is used this system may be designed with conventional reinforcing. The slab should be designed in accordance with WRI/CRSI "Design Slab-On-Ground Foundations". The structure can be supported on a monolithic/waffle slab and grade beam foundation system designed in accordance with the following information:

Design Parameter	BRAB/WRI Slab
Allowable Bearing Pressure	3,000 psf
Design PI	30
Climatic Rating (Cw)	20
Soil-Climate Support Index (1-C)	0.15

**Post-Tensioned Slab:** In lieu of a BRAB/WRI slab, a post-tensioned slab on grade could be used. The following design parameters are recommended for the Post-Tensioning Institute's slab-on-grade design method (3<sup>rd</sup> Edition) should that method be chosen:

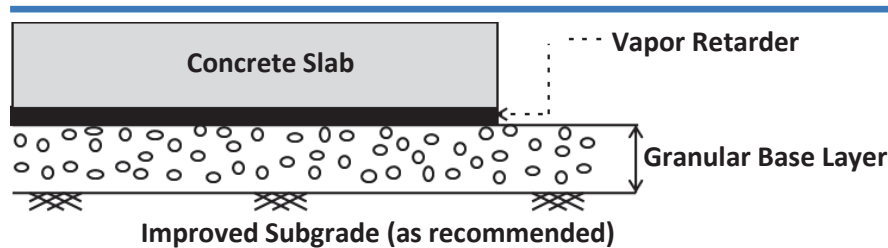
Center Lift		Edge Lift	
$e_m$ (feet)	$Y_m$ (inches)	$e_m$ (feet)	$Y_m$ (inches)
6.5	0.5	3.5	0.8

**Potential Undercuts:** DCP testing of the bearing soils by ECS representatives should be incorporated during construction to verify their suitability for supporting shallow foundations. If soft or inadequate soils are observed at the footing bearing elevations, these soils should be undercut and removed. Any undercut should be backfilled with lean concrete ( $f'_c \geq 1,000$  psi at 28 days) up to the original design bottom of footing elevation; the original footing shall be constructed on top of the hardened lean concrete.

#### 4.4 CONVENTIONAL SLAB ON GRADE

A conventional slab on grade may be used provided it is supported on subgrades improved as presented in this report.

The following graphic depicts our soil-supported slab recommendations:



1. Concrete Slab Thickness: 4 inches minimum
2. Concrete Slab Strength: 3,000 psi minimum
3. Drainage Layer Thickness: 4 inches minimum
4. Drainage Layer Material: GRAVEL (GP, GW)
5. Subgrade compacted per the earthwork recommendations provided.

**Subgrade Modulus:** Provided subgrades are improved and prepared as discussed herein, the slab may be designed assuming a modulus of subgrade reaction,  $k_1$  of 125 pci (lbs/cu. inch).

**Vapor Retarder:** Before the placement of concrete, a vapor retarder may be placed on top of the granular drainage layer to provide additional protection against moisture penetration through the floor slab. When a vapor retarder is used, special attention should be given to surface curing of the slab to reduce the potential for uneven drying, curling and/or cracking of the slab. Depending on proposed flooring material types, the structural engineer and/or the architect may choose to eliminate the vapor retarder.

**Slab Isolation:** Soil-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab such as in a drop-down footing/monolithic slab configuration, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab.

#### 4.5 BUILDING PERIMETER CONDITIONS

Soils placed along the exterior of the foundations should consist of fine-grained soils encountered on site, placed and compacted in accordance with this report. The purpose of this clay backfill is to reduce the opportunity for surface or subsurface water infiltration beneath the structure. Additionally, where lateral penetrations (for utilities) into or below the structure occur, a clay plug (or suitable synthetic alternative) should be placed at the building line to reduce the opportunity for infiltrating water, regardless of the backfill material. A clay plug detail is included in Appendix A.

Positive drainage away from the structure should also be provided. Additionally, irrigation of lawn and landscaped areas should be moderate, with no excessive wetting or drying of soils around the perimeter of the structures allowed. Trees and bushes/shrubs planted near the perimeter of the structures can withdraw large amounts of water from the soils and should be planted at least their anticipated mature height away from the building.

Where flatwork is placed against or near the structure, a positive seal must be installed and adequately maintained to limit water intrusion. Down spouts and gutters should be used to collect and distribute water at least 10 feet away from the structure.



Routine maintenance of the building perimeter condition is necessary so that the recommendations contained in this report are followed and maintained. Greater potential vertical movements could occur with extreme wetting or drying of the soils due to poor drainage, ponding of water, plumbing leaks, lack of irrigation, and/or lack of routine maintenance, etc.

#### 4.6 SEISMIC DESIGN CONSIDERATIONS

**Seismic Site Classification:** The International Building Code (IBC) 2015/2018 requires site classification for seismic design based on the upper 100 feet of a soil profile. At least two methods are utilized in classifying sites, namely the shear wave velocity ( $v_s$ ) method and the Standard Penetration Resistance (N-value) method. The Standard Penetration Resistance (N-value) method was used in classifying this site.

SEISMIC SITE CLASSIFICATION			
Site Class	Soil Profile Name	Shear Wave Velocity, $V_s$ , (ft./s)	N value (bpf)
A	Hard Rock	$V_s > 5,000$ fps	N/A
B	Rock	$2,500 < V_s \leq 5,000$ fps	N/A
C	Very dense soil and soft rock	$1,200 < V_s \leq 2,500$ fps	$> 50$
D	Stiff Soil Profile	$600 \leq V_s \leq 1,200$ fps	15 to 60
E	Soft Soil Profile	$V_s < 600$ fps	$< 15$

Based upon our interpretation of the subsurface conditions, the appropriate Seismic Site Classification is "C" as shown in the preceding table.

**Ground Motion Parameters:** In addition to the seismic site classification, ECS has determined the design spectral response acceleration parameters following the IBC methodology. The Mapped Responses were estimated from the U.S. Seismic Design Maps website <https://seismicmaps.org/>. The design responses for the short (0.2 sec,  $S_{DS}$ ) and 1-second period ( $S_{D1}$ ) are noted in bold at the far right end of the following table.

GROUND MOTION PARAMETERS [IBC 2015 Method]							
Period (sec)	Mapped Spectral Response Accelerations (g)		Values of Site Coefficient for Site Class		Maximum Spectral Response Acceleration Adjusted for Site Class (g)		Design Spectral Response Acceleration (g)
Reference	Figures 1613.3.1 (1) & (2)		Tables 1613.3.3 (1) & (2)		Eqs. 16-37 & 16-38		Eqs. 16-39 & 16-40
0.2	$S_s$	0.138	$F_a$	1.2	$S_{MS}=F_a S_s$	0.166	$S_{DS}=2/3 S_{MS}$ 0.11
1.0	$S_1$	0.072	$F_v$	1.7	$S_{M1}=F_v S_1$	0.122	$S_{D1}=2/3 S_{M1}$ 0.082

The Site Class definition should not be confused with the Seismic Design Category designation which the Structural Engineer typically assesses. If a higher site classification is beneficial to the project, we can provide additional testing methods that may yield more favorable results.

#### 4.7 PAVEMENTS

**Subgrade Characteristics:** Based on the results of our borings, it appears that the pavement subgrades will consist of existing high plasticity soils. The subgrade should be prepared in accordance with the recommendations in the “Site Construction Recommendations” section of this report.

**Design Traffic Loading:** We were not provided traffic loading information so we have assumed heavy duty pavements will experience a maximum traffic loading of 380,000 ESALs.

The preliminary pavement sections below are guidelines that may or may not comply with local jurisdictional minimums.

PROPOSED PAVEMENT SECTIONS				
MATERIAL	FLEXIBLE PAVEMENT		RIGID PAVEMENT	
	Heavy Duty	Light Duty	Heavy Duty	Light Duty
Portland Cement Concrete <sup>(1)</sup>	-	-	6 in.	5 in.
Asphaltic Concrete Surface Course	2 in.	2 in.	-	-
Asphaltic Concrete Binder Course <sup>(2)</sup>	4 ½ in	3 in.	-	-
Stabilized Subgrades <sup>(3,4)</sup>	8 in.	8 in.	8 in.	8 in.

Notes:

- (1) Due to the excessive surface wear and subsequent deterioration of asphalt pavement caused by turning truck traffic, we recommend that any areas where trucks will be turning or backing up be constructed of Portland cement concrete only.
- (2) ODOT Type A aggregate base material may be substituted for the asphalt binder using a substitute ratio of three inches of aggregate base for each inch of asphalt binder.
- (3) Based on experience with similar soils, we estimate 5 percent lime will be required to stabilize the near surface soils at this site. The final amount and type of stabilizing agent should be determined at the time of construction based on the type(s) of material(s) at final grade.
- (4) In lieu of stabilized subgrades, 6 inches of ODOT Type A aggregate base material may be used.

ECS should be allowed to review these recommendations and make appropriate revisions based upon the formulation of the final traffic design criteria for the project. It is important to note that the design sections do not account for construction traffic loading. It should also be noted that these design recommendations may not satisfy the local jurisdictional traffic guidelines. Any roadways constructed for public use and to be dedicated to the local or state jurisdiction for repair and maintenance must be designed in accordance with those jurisdictional requirements.

In general, heavy duty sections are areas that will be subjected to trucks, buses, or other similar vehicles including main drive lanes of the development. Light duty sections are appropriate for vehicular traffic and parking areas.

An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the base course layer, softening of the subgrade and other problems related to the deterioration of the pavement can be expected. Furthermore, good drainage should reduce the possibility of the subgrade materials becoming saturated during the normal service period of the pavement.

Large, front loading trash dumpsters frequently impose concentrated front wheel loads on pavements during loading. This type of loading typically results in rutting of asphalt pavement and ultimately pavement failures. For preliminary design purposes, we recommend that the pavement in trash pickup areas consist of an 8 inch thick Portland Cement Concrete (PCC) pavement section. Appropriate jointing should also be incorporated into the design of the PCC pavement. When traffic loading becomes available ECS or the Civil Engineer can design the pavements.

Pavements should be specified, constructed and tested to meet the ODOT Standard Specifications for Highway Construction and the following requirements:

1. Reinforcing steel may consist of #3 reinforcing steel bars placed at 18 inches on center each way.
2. Hot Mix Asphaltic Concrete: In accordance with Oklahoma Department of Transportation (ODOT) Standard Specifications.
3. Portland Cement Concrete: Minimum compressive strength of 3,500 psi (28 Days). Concrete should be designed with 3 to 6 percent entrained air.

Crushed Limestone Base Material: ODOT Type A Aggregate Base. The material should be compacted to a minimum 95 percent of Standard Proctor maximum dry density (ASTM D 698) and within three percentage points of the material's optimum moisture.

## **5.0 SITE CONSTRUCTION RECOMMENDATIONS**

### **5.1 SUBGRADE PREPARATION**

In a dry and undisturbed state, the upper 1-foot of the majority of the soil at the site should provide good subgrade support for fill placement and construction operations. However, when wet, this soil will degrade quickly with disturbance from contractor operations. Therefore, good site drainage should be maintained during earthwork operations, which should help maintain the integrity of the soil.

The surface of the site should be kept properly graded in order to enhance drainage of the surface water away from the proposed structures during the construction phase. We recommend that an attempt be made to enhance the natural drainage without interrupting its pattern, where possible.

The soils at the site are moisture and disturbance sensitive, and contain fines which are considered moderately erodible. Therefore, the contractor should carefully plan his operation to limit exposure of the subgrade to weather and construction equipment traffic, and provide and maintain good site drainage during earthwork operations. All erosion and sedimentation shall be controlled in accordance with sound engineering practice and current jurisdictional requirements.

#### **5.1.1 Stripping and Grubbing**

The subgrade preparation should consist of removing all existing foundations, utilities, and pavements, and stripping all vegetation, topsoil, loose, poorly compacted or deleterious existing soils, existing fill (as defined in this report), and any soft or yielding materials from the 5-foot expanded building area, and any areas receiving new fill. Deeper topsoil or organic laden soils may be present in wet, low-lying, and poorly drained areas. ECS should be retained to verify that topsoil

and yielding surficial materials have been removed prior to the placement of structural fill or construction of structures.

#### **5.1.2 Proofrolling**

Prior to fill placement or other construction on subgrades, the subgrades should be evaluated by an ECS field technician. The exposed subgrade should be thoroughly proofrolled with construction equipment having a minimum axle load of 10 tons [e.g. fully loaded tandem-axle dump truck]. Proofrolling should be traversed in two perpendicular directions with overlapping passes of the vehicle under the observation of an ECS technician. This procedure is intended to assist in identifying any localized yielding materials.

Where proofrolling identifies areas that are yielding or “pumping” subgrade those areas should be repaired prior to the placement of any subsequent Structural Fill or other construction materials. Methods of stabilization include undercutting, moisture conditioning, or chemical stabilization. The situation should be discussed with ECS to determine the appropriate procedure. Test pits may be excavated to explore the shallow subsurface materials to help in determining the cause of the observed yielding materials, and to assist in the evaluation of appropriate remedial actions to repair the subgrade.

### **5.2 EARTHWORK OPERATIONS**

The following sections describe the requirements for fill placement and earthwork testing.

#### **5.2.1 Fill Placement**

Prior to placement of any new fill or other construction material, subgrades should be scarified to a minimum depth of 8 inches, moisture conditioned to a workable moisture content at or above the optimum value and compacted to at least 95% of Maximum Dry Density as obtained by the Standard Proctor Method (ASTM D-698).

Fill material in the building pad areas should consist of select fill. Details regarding select fill are presented in the “Materials Specifications” section of this report. Fill material should be moisture conditioned at or above the optimum moisture content and compacted to at least 95% of the Maximum Dry Density as obtained by the Standard Proctor Method (ASTM D-698).

Soil moisture levels should be preserved (by various methods that can include covering with plastic, watering, etc.) until new fill, pavements, or slabs are placed. Fill soils should be placed in maximum 8 inch loose lifts for mass grading operations and maximum 4 inches for trench type excavations where walk behind or “jumping jack” compaction equipment is used.

Upon completion of the filling operations, care should be taken to maintain the soil moisture content prior to construction of floor slabs and/or pavements. If the soil becomes desiccated, the affected material should be removed and replaced, or these materials should be scarified, moisture conditioned and recompacted.

#### **5.2.2 Earthwork Testing**

Field density and moisture tests should be performed by ECS on each lift as necessary to verify that adequate compaction is achieved. One test per 2,500 square feet per lift is recommended in the future building and pavement areas (two tests minimum per lift). Utility trench backfill should be

tested at a rate of one test per lift per each 150 linear feet of trench (two tests minimum per lift). Certain jurisdictional requirements may require testing in addition to that noted previously. Therefore, these recommendations should be reviewed and the more stringent specifications should be followed.

### **5.3 MATERIAL SPECIFICATIONS**

The recommendations provided in the “Subgrade Improvements” portion of this report outline the subgrade improvement options required in order to achieve the desired PVM. This section is intended to outline the material requirements of those recommendations.

#### **5.3.1 Select Fill**

For the purposes of this report, select fill may consist of imported material that is free of debris and organic matter, has a Plasticity Index (PI) between 8 and 15, no less than 60% passing the No. 200 sieve and a maximum particle size of 2 inches. The PI and gradation of this material should be evaluated by ECS at the time of construction.

This material should be placed and compacted at workable moisture contents at or above the optimum moisture content and compacted to at least 95% of the Maximum Dry Density as obtained using the Standard Proctor Method (ASTM D-698).

#### **5.3.2 Moisture Conditioning**

Within the planned pads and flatwork sensitive to movements, moisture conditioning should be performed as outlined in this report. Reworking of the existing clays, and new clayey fill, is performed to increase the moisture of the clays to a level that reduces their ability to absorb additional water that could result in post-construction heave in these soils.

The moisture conditioning should consist of undercutting, scarifying and/or reworking, as required to achieve the required subgrade improvement. During this process, the clay should receive adequate amounts of water to attain an even moisture content of at least +2% or higher above the optimum moisture content. During the addition of water, the soils should be adequately mixed, and re-mixed, to achieve an even distribution of the moisture throughout the soil mass. Once appropriately mixed, the material should be compacted to at least 95% of the Maximum Dry Density as obtained using the Standard Proctor Method (ASTM D-698).

Outside of the moisture conditioned zone and where clay is used to establish site grades, we recommend that this material be placed and compacted to at least 95% of the Maximum Dry Density as obtained using the Standard Proctor Method (ASTM D-698). These soils should be free of deleterious materials, and be reworked to achieve an even distribution of water in order to achieve a moisture content of  $\pm 2\%$  of the material optimum moisture content.

Care should be taken to verify and preserve the specified moisture levels in the reworked clays prior to placement of non-expansive fill.

#### **5.3.3 Lime Stabilized On Site Clay**

In lieu of importing select fill, as defined above, the on-site clay soils may be lime stabilized. The advantage of lime stabilization over untreated material is that the nature of the stabilized soil is such that, once placed, it limits water infiltration into the subgrade and promotes surface drainage.

A preliminary lime application rate of 5% hydrated lime by dry weight of clay should be used for budgeting purposes. The lime stabilized clay should be thoroughly mixed and appropriately mellowed for at least 48 hours and tested for gradation and lime reactivity (pH) prior to final placement and compaction.

Once appropriately mixed and mellowed, this material may then be placed and compacted at workable moisture contents at least +3% above the optimum moisture content and compacted to at least 95% of the Maximum Dry Density as obtain using the Standard Proctor Method (ASTM D-698).

#### 5.4 FOUNDATION AND SLAB OBSERVATIONS

**Protection of Foundation Excavations:** Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 1 to 3-inch thick “mud mat” of “lean” concrete should be placed on the bearing soils before the placement of reinforcing steel.

**Footing Subgrade Observations:** Most of the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structure. It is important to have ECS observe the foundation subgrade prior to placing foundation concrete, to confirm the bearing soils are what was anticipated.

**Slab Subgrade Verification:** Prior to placement of a granular base/drainage layer, the subgrade should be improved/prepared in accordance with recommendations provided in this report.

#### 5.5 UTILITY INSTALLATIONS

**Utility Subgrades:** The soils encountered in our exploration are expected to be generally suitable for support of utility pipes. The pipe subgrades should be observed and probed for stability by ECS. Utility cuts should not be left open for more than 24 hours or during times when precipitation is anticipated and should be properly backfilled. Any loose or unsuitable materials encountered should be removed and replaced with suitable compacted fill, or pipe stone bedding material.

**Utility Backfilling:** Backfilling should be accomplished with properly compacted on-site soils, rather than granular materials. If granular materials are used, a utility trench cut-off at the building line is recommended to help prevent water from migrating through the utility trench backfill to beneath the proposed structure. If used, the granular bedding material (often AASHTO #57 stone) should be at least 4 inches thick, but not less than that specified by the civil engineer’s project drawings and specifications. We recommend that the bedding materials be placed up to the springline of the pipe. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for fill placement provided in this report.

**Excavation Safety:** All excavations and slopes should be constructed and maintained in accordance with OSHA excavation safety standards. The contractor is solely responsible for designing, constructing, and maintaining stable temporary excavations and slopes. The contractor’s responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the

excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our client. ECS is not assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

## **6.0 CLOSING**

ECS has prepared this report of findings, evaluations, and recommendations to guide geotechnical-related design and construction aspects of the project. In fulfilling our obligations and responsibilities, as listed in the proposal, we performed these services in accordance with the standard of care expected of professionals in the industry performing similar services on projects of like size and complexity at this time in the region. No other representation, expressed or implied, and no warranty or guarantee is included or intended in this report. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

The description of the proposed project is based on information provided to ECS by the project design team. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so that we can review the report in light of the changes and provide additional or alternate recommendations as may be required.

We recommend that ECS review the project's plans and specifications so that we may evaluate those plans/specifications with the intent of the geotechnical report.

Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendations. We recommend that the Owner retain ECS throughout construction.

ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

## **APPENDIX A – Drawings & Reports**

Site Location Diagram

Boring Location Diagram

Generalized Subsurface Soil Profile A-A'

Clay Plug Detail at Trench



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors



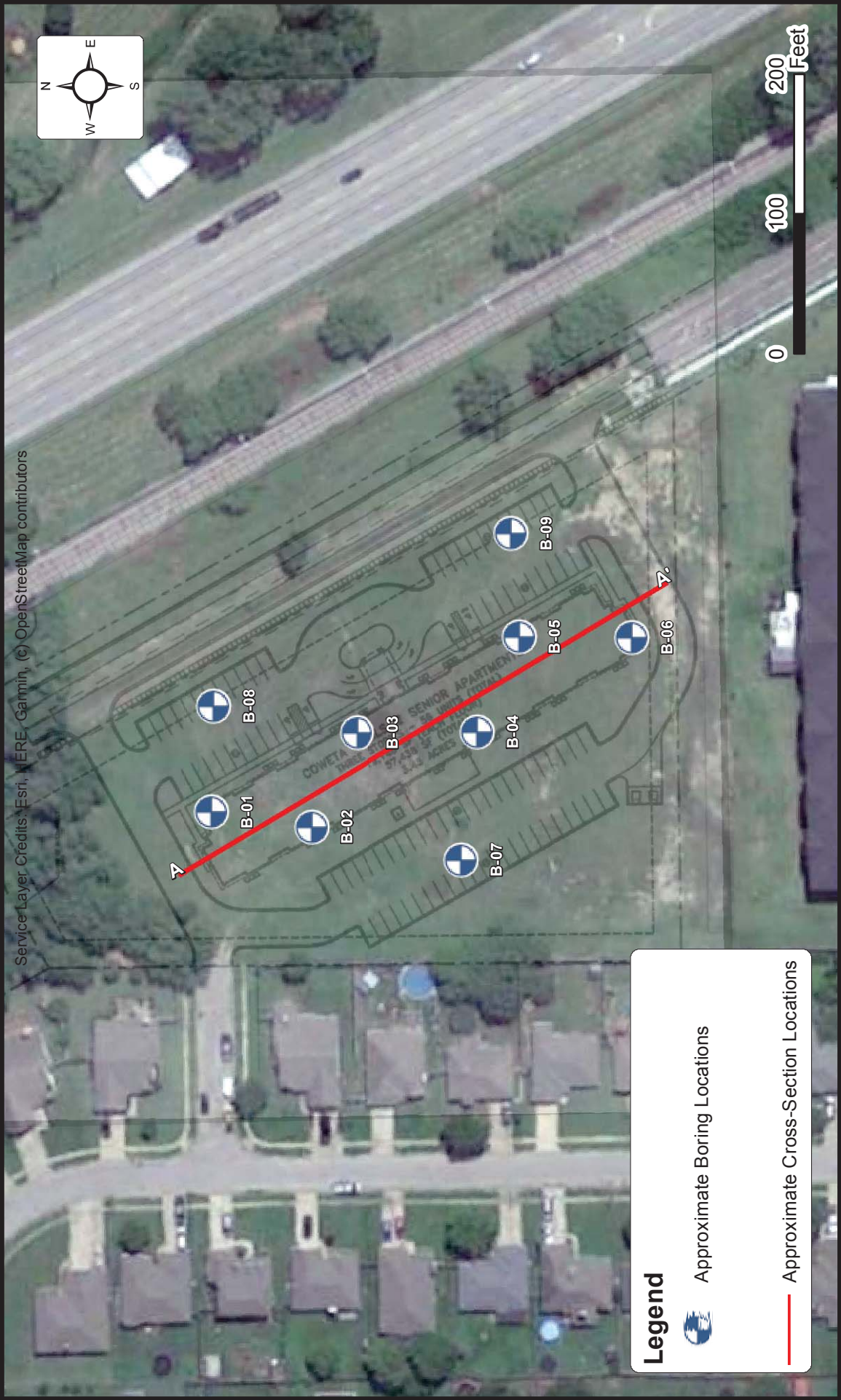
ENGINEER	AW
SCALE	AS NOTED
PROJECT NO.	58:1518
FIGURE	1 OF 1
DATE	8/26/2022

# SITE LOCATION DIAGRAM COWETA TRAILS PHASE II

11954 S 273RD E AVENUE, COWETA, OKLAHOMA  
CARLSON CONSULTING ENGINEERS, INC.







Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

### Legend



Approximate Boring Locations



Approximate Cross-Section Locations



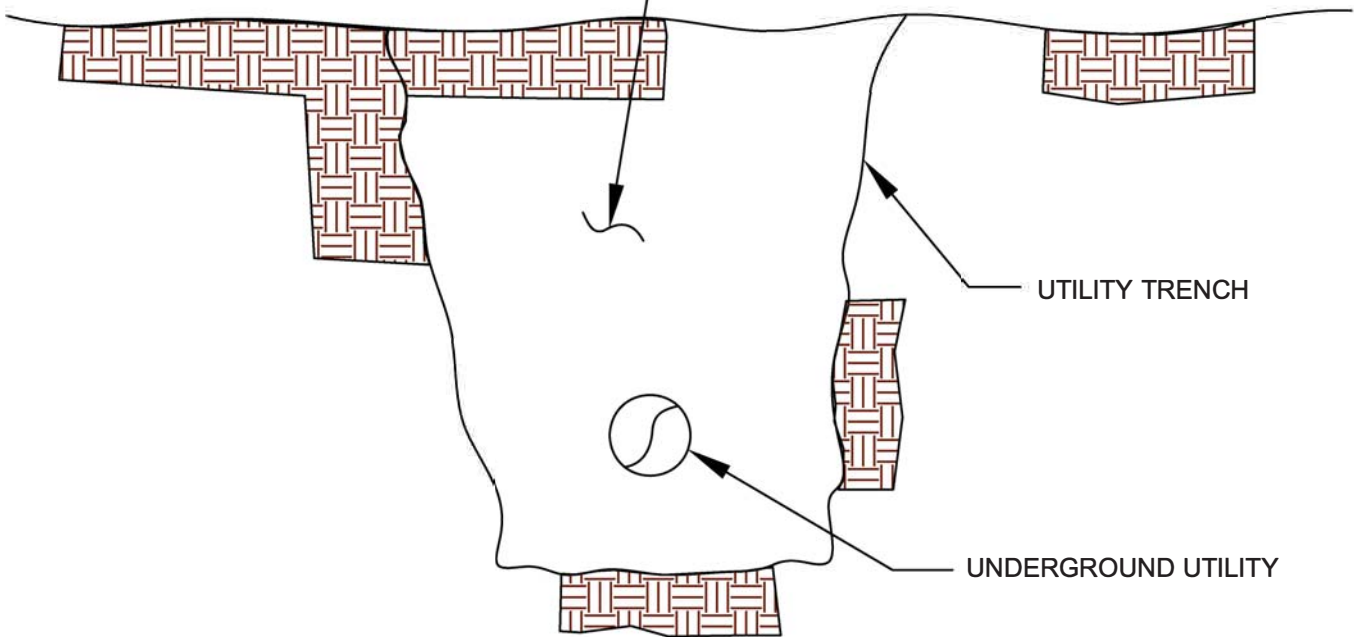
## BORING LOCATION DIAGRAM COWETA TRAILS PHASE II

11954 S 273RD E AVENUE, COWETA, OKLAHOMA  
CARLSON CONSULTING ENGINEERS, INC.

ENGINEER	AW
SCALE	AS NOTED
PROJECT NO.	58:1518
FIGURE	1 OF 1
DATE	8/26/2022



REFER TO MEP AND/OR CIVIL  
DRAWINGS FOR TYPICAL BEDDING  
MATERIALS AT EXTERIOR FACE OF  
BUILDING. REPLACE BEDDING  
MATERIALS WITH SITE CLAY SOIL.  
EXTEND CLAY 2 FEET FROM BUILDING.  
PLACE IN 8" MAX. LOOSE LIFTS.  
COMPACT TO 92% OF STANDARD  
PROCTOR (ASTM D-698), ABOVE  
OPTIMUM MOISTURE CONTENT.



## TYPICAL DETAIL DIAGRAM



## CLAY PLUG AT UTILITY TRENCH

ENGINEER	SCALE
	NTS
DRAFTSMAN CLL	PROJECT NO.
REVISIONS	SHEET
	1 OF 1
	DATE
	11/7/08

## **APPENDIX B – Field Operations**

Reference Notes for Boring Logs

Subsurface Exploration Procedure: Standard Penetration Testing (SPT)

Boring Logs B-01 to B-09



# REFERENCE NOTES FOR BORING LOGS

## MATERIAL<sup>1,2</sup>

	<b>ASPHALT</b>
	<b>CONCRETE</b>
	<b>GRAVEL</b>
	<b>TOPSOIL</b>
	<b>VOID</b>
	<b>BRICK</b>
	<b>AGGREGATE BASE COURSE</b>
	<b>GW WELL-GRADED GRAVEL</b> gravel-sand mixtures, little or no fines
	<b>GP POORLY-GRADED GRAVEL</b> gravel-sand mixtures, little or no fines
	<b>GM SILTY GRAVEL</b> gravel-sand-silt mixtures
	<b>GC CLAYEY GRAVEL</b> gravel-sand-clay mixtures
	<b>SW WELL-GRADED SAND</b> gravelly sand, little or no fines
	<b>SP POORLY-GRADED SAND</b> gravelly sand, little or no fines
	<b>SM SILTY SAND</b> sand-silt mixtures
	<b>SC CLAYEY SAND</b> sand-clay mixtures
	<b>ML SILT</b> non-plastic to medium plasticity
	<b>MH ELASTIC SILT</b> high plasticity
	<b>CL LEAN CLAY</b> low to medium plasticity
	<b>CH FAT CLAY</b> high plasticity
	<b>OL ORGANIC SILT or CLAY</b> non-plastic to low plasticity
	<b>OH ORGANIC SILT or CLAY</b> high plasticity
	<b>PT PEAT</b> highly organic soils

## DRILLING SAMPLING SYMBOLS & ABBREVIATIONS

SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

## PARTICLE SIZE IDENTIFICATION

DESIGNATION	PARTICLE SIZES
Boulders	12 inches (300 mm) or larger
Cobbles	3 inches to 12 inches (75 mm to 300 mm)
Gravel: Coarse	¾ inch to 3 inches (19 mm to 75 mm)
Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand: Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")	<0.074 mm (smaller than a No. 200 sieve)

## COHESIVE SILTS & CLAYS

UNCONFINED COMPRESSIVE STRENGTH, QP <sup>4</sup>	SPT <sup>5</sup> (BPF)	CONSISTENCY <sup>7</sup> (COHESIVE)
<0.25	<2	Very Soft
0.25 - <0.50	2 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT <sup>7</sup>	COARSE GRAINED (%) <sup>8</sup>	FINE GRAINED (%) <sup>8</sup>
Trace	≤5	≤5
With	10 - 20	10 - 25
Adjective (ex: "Silty")	25 - 45	30 - 45

## GRAVELS, SANDS & NON-COHESIVE SILTS

SPT <sup>5</sup>	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

## WATER LEVELS<sup>6</sup>

	WL (First Encountered)
	WL (Completion)
	WL (Seasonal High Water)
	WL (Stabilized)

## FILL AND ROCK

<b>FILL</b>	<b>POSSIBLE FILL</b>	<b>PROBABLE FILL</b>	<b>ROCK</b>

<sup>1</sup>Classifications and symbols per ASTM D 2488-17 (Visual-Manual Procedure) unless noted otherwise.

<sup>2</sup>To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

<sup>3</sup>Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

<sup>4</sup>Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

<sup>5</sup>Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf). SPT correlations per 7.4.2 Method B and need to be corrected if using an auto hammer.

<sup>6</sup>The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

<sup>7</sup>Minor deviation from ASTM D 2488-17 Note 14.

<sup>8</sup>Percentages are estimated to the nearest 5% per ASTM D 2488-17.





## SUBSURFACE EXPLORATION PROCEDURE: STANDARD PENETRATION TESTING (SPT) ASTM D 1586 Split-Barrel Sampling




Standard Penetration Testing, or **SPT**, is the most frequently used subsurface exploration test performed worldwide. This test provides samples for identification purposes, as well as a measure of penetration resistance, or N-value. The N-Value, or blow counts, when corrected and correlated, can approximate engineering properties of soils used for geotechnical design and engineering purposes.

### SPT Procedure:

- Involves driving a hollow tube (split-spoon) into the ground by dropping a 140-lb hammer a height of 30-inches at desired depth
- Recording the number of hammer blows required to drive split-spoon a distance of 12 inches (in 3 or 4 Increments of 6 inches each)
- Auger is advanced\* and an additional SPT is performed
- One SPT test is typically performed for every two to five feet
- Obtain two-inch diameter soil sample



*\*Drilling Methods May Vary—* The predominant drilling methods used for SPT are open hole fluid rotary drilling and hollow-stem auger drilling.

CLIENT: <b>Carlson Consulting Engineers, Inc.</b>				PROJECT NO.: <b>58:1518</b>		BORING NO.: <b>B-01</b>		SHEET: <b>1 of 1</b>		
PROJECT NAME: <b>Coweta Trails Phase II</b>				DRILLER/CONTRACTOR: <b>Drilling Services of Oklahoma</b>						
SITE LOCATION: <b>11954 S 273rd E Avenue, Coweta, Oklahoma 74429</b>								LOSS OF CIRCULATION 		
NORTHING: <b>975317.6</b>		EASTING: <b>2656580.9</b>		STATION:		SURFACE ELEVATION: <b>663.00</b>		BOTTOM OF CASING 		




DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		ROCK QUALITY DESIGNATION & RECOVERY		WATER CONTENT % [FINES CONTENT] %					
									20	40	60	80	100	1	2	3	4	5
					Topsoil Thickness[6"]													
	S-1	SS	18	18	(CL) LEAN CLAY, dark brown and orange to light brown and black, moist, stiff to firm to stiff to hard			11-7-8 (15)	15				13.2					
5	S-2	SS	18	18			658	3-3-3 (6)	6				17.6					
	S-3	SS	18	18				2-3-3 (6)	6				17	46 [88.2%]				
10	S-4	SS	18	18			653	3-5-5 (10)	10									
15	S-5	SS	18	18			648	15-17-21 (38)	38				16.2					
20	S-6	SS	1	0	(WR) WEATHERED LIMESTONE, light brown, very hard AUGER REFUSAL AT 18.5 FT		643	50/1" (50/1")	50/1"									
25							638											
30							633											

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL			
<input checked="" type="checkbox"/> WL (First Encountered)	<b>Dry</b>	BORING STARTED:	<b>Aug 08 2022</b>
<input checked="" type="checkbox"/> WL (Completion)		BORING COMPLETED:	<b>Aug 08 2022</b>
<input checked="" type="checkbox"/> WL (Seasonal High Water)		EQUIPMENT:	<b>Truck #1</b>
<input checked="" type="checkbox"/> WL (Stabilized)		LOGGED BY:	<b>MOY</b>
		CAVE IN DEPTH:	
		HAMMER TYPE:	
		DRILLING METHOD: <b>Solid Stem Auger</b>	

**GEOTECHNICAL BOREHOLE LOG**







CLIENT: <b>Carlson Consulting Engineers, Inc.</b>				PROJECT NO.: <b>58:1518</b>		BORING NO.: <b>B-02</b>		SHEET: <b>1 of 1</b>		
PROJECT NAME: <b>Coweta Trails Phase II</b>				DRILLER/CONTRACTOR: <b>Drilling Services of Oklahoma</b>						
SITE LOCATION: <b>11954 S 273rd E Avenue, Coweta, Oklahoma 74429</b>								LOSS OF CIRCULATION 		
NORTHING: <b>975256.9</b>		EASTING: <b>2656573.1</b>		STATION:		SURFACE ELEVATION: <b>663.00</b>		BOTTOM OF CASING 		




DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		ROCK QUALITY DESIGNATION & RECOVERY		CALIBRATED PENETROMETER TSF		WATER CONTENT % [FINES CONTENT] %								
									20	40	60	80	100	1	2	3	4	5	10	20	30	40	50
									RQD		REC												
					Topsoil Thickness[6"]																		
	S-1	SS	18	18	(CL) LEAN CLAY, brown to black and brown to orangish brown and black to brown and dark gray, moist, stiff to firm to stiff to hard, auger refusal at approximately 17 feet on presumed Weathered Limestone			6-5-5 (10)	10								14.1						
5	S-2	SS	18	18				3-4-4 (8)	8									26.3					
	S-3	SS	18	18				4-5-6 (11)	11									14 23.6 43 [87.3%]					
10	S-4	SS	18	18				3-5-7 (12)	12									16.9					
15	S-5	SS	18	18				9-11-22 (33)	33														
					AUGER REFUSAL AT 17.0 FT																		
20																							
25																							
30																							

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL			
 WL (First Encountered)	<b>Dry</b>	BORING STARTED: <b>Aug 09 2022</b>	CAVE IN DEPTH:
 WL (Completion)		BORING COMPLETED: <b>Aug 09 2022</b>	HAMMER TYPE:
 WL (Seasonal High Water)		EQUIPMENT: <b>Truck #1</b>	LOGGED BY: <b>MOY</b>
 WL (Stabilized)		DRILLING METHOD: <b>Solid Stem Auger</b>	

<b>GEOTECHNICAL BOREHOLE LOG</b>			
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CLIENT: <b>Carlson Consulting Engineers, Inc.</b>				PROJECT NO.: <b>58:1518</b>		BORING NO.: <b>B-03</b>		SHEET: <b>1 of 1</b>		
PROJECT NAME: <b>Coweta Trails Phase II</b>				DRILLER/CONTRACTOR: <b>Drilling Services of Oklahoma</b>						
SITE LOCATION: <b>11954 S 273rd E Avenue, Coweta, Oklahoma 74429</b>								LOSS OF CIRCULATION 		
NORTHING: <b>975218.4</b>		EASTING: <b>2656639.4</b>		STATION:		SURFACE ELEVATION: <b>662.00</b>		BOTTOM OF CASING 		




DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		ROCK QUALITY DESIGNATION & RECOVERY		WATER CONTENT % [FINES CONTENT] %					
									20	40	60	80	100	1	2	3	4	5
									RQD					REC				
					Topsoil Thickness[6"]													
	S-1	SS	18	18	(CL) LEAN CLAY, dark brown to black and brown to orangish brown and black to orangish brown and gray, moist, stiff to hard, auger refusal at approximately 17 feet on presumed Weathered Limestone			7-5-4 (9)	9									
5	S-2	SS	18	18				4-4-5 (9)	9				16	45				
	S-3	SS	18	18				3-4-6 (10)	10				22.7	[89.5%]				
10	S-4	SS	18	18				3-7-8 (15)	15				15.6					
	S-5	SS	18	18				13-14-20 (34)	34				26.0					
15					AUGER REFUSAL AT 17.0 FT													
20																		
25																		
30																		

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL			
<input checked="" type="checkbox"/> WL (First Encountered)	<b>Dry</b>	BORING STARTED: <b>Aug 09 2022</b>	CAVE IN DEPTH:
<input checked="" type="checkbox"/> WL (Completion)		BORING COMPLETED: <b>Aug 09 2022</b>	HAMMER TYPE:
<input checked="" type="checkbox"/> WL (Seasonal High Water)		EQUIPMENT: <b>Truck #1</b>	LOGGED BY: <b>MOY</b>
<input checked="" type="checkbox"/> WL (Stabilized)		DRILLING METHOD: <b>Solid Stem Auger</b>	

**GEOTECHNICAL BOREHOLE LOG**

CLIENT: <b>Carlson Consulting Engineers, Inc.</b>				PROJECT NO.: <b>58:1518</b>		BORING NO.: <b>B-04</b>		SHEET: <b>1 of 1</b>		
PROJECT NAME: <b>Coweta Trails Phase II</b>				DRILLER/CONTRACTOR: <b>Drilling Services of Oklahoma</b>						
SITE LOCATION: <b>11954 S 273rd E Avenue, Coweta, Oklahoma 74429</b>								LOSS OF CIRCULATION 		
NORTHING: <b>975135.0</b>		EASTING: <b>2656641.6</b>		STATION:		SURFACE ELEVATION: <b>662.00</b>		BOTTOM OF CASING 		




DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		ROCK QUALITY DESIGNATION & RECOVERY		CALIBRATED PENETROMETER TSF		<div> <div>△ LIQUID LIMIT</div> <div>× PLASTIC LIMIT</div> </div>				
									20	40	60	80	100	1		2	3	4	5
														10		20	30	40	50
					Topsoil Thickness[6"]														
5	S-1	SS	18	18	(CL) LEAN CLAY, brown to brown and black to orangish brown and gray, moist, stiff to firm to stiff to hard, auger refusal at approximately 16.5 feet on presumed Weathered Limestone		657	9-6-5 (11)	11					15	44	[89.8%]			
	S-2	SS	18	18			657	4-4-4 (8)	8					19.6					
	S-3	SS	18	18			652	3-4-5 (9)	9					25.3					
10	S-4	SS	18	18			652	4-5-6 (11)	11										
15	S-5	SS	18	18			647	12-18-23 (41)	41					20.7					
20					AUGER REFUSAL AT 16.5 FT		642												
25							637												
30							632												

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL			
<div> <div>▽ WL (First Encountered)</div> <div>▼ WL (Completion)</div> <div>▽ WL (Seasonal High Water)</div> <div>▽ WL (Stabilized)</div> </div>	<div> <div>Dry</div> </div>	<div> <div>BORING STARTED: Aug 09 2022</div> <div>BORING COMPLETED: Aug 09 2022</div> <div>EQUIPMENT: Truck #1</div> </div>	<div> <div>CAVE IN DEPTH:</div> <div>HAMMER TYPE:</div> <div>DRILLING METHOD: Solid Stem Auger</div> </div>

GEOTECHNICAL BOREHOLE LOG

CLIENT: <b>Carlson Consulting Engineers, Inc.</b>				PROJECT NO.: <b>58:1518</b>		BORING NO.: <b>B-05</b>		SHEET: <b>1 of 1</b>		
PROJECT NAME: <b>Coweta Trails Phase II</b>				DRILLER/CONTRACTOR: <b>Drilling Services of Oklahoma</b>						
SITE LOCATION: <b>11954 S 273rd E Avenue, Coweta, Oklahoma 74429</b>								LOSS OF CIRCULATION 		
NORTHING: <b>975099.8</b>		EASTING: <b>2656709.3</b>		STATION:		SURFACE ELEVATION: <b>663.00</b>		BOTTOM OF CASING 		




DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		ROCK QUALITY DESIGNATION & RECOVERY		CALIBRATED PENETROMETER TSF		<div> <div>△ LIQUID LIMIT</div> <div>× PLASTIC LIMIT</div> </div>
									20 40 60 80 100				1 2 3 4 5		
					Topsoil Thickness[6"]										
5	S-1	SS	18	18	(CL) LEAN CLAY, brown to orangish brown and black to light brown, orangish brown, and gray, moist, firm to stiff to hard, auger refusal at approximately 16 feet on presumed Weathered Limestone		658	5-3-3 (6)	6					23.4	
	S-2	SS	18	18				3-4-5 (9)	9					15.4	
	S-3	SS	18	18				5-5-5 (10)	10					13.4	
10	S-4	SS	18	18				4-5-6 (11)	11					14.0	
15	S-5	SS	18	18				13-12-19 (31)	31						
					AUGER REFUSAL AT 16.0 FT										
20							643								
25							638								
30							633								

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL			
<div> <div>▽ WL (First Encountered)</div> <div>▼ WL (Completion)</div> <div>▽ WL (Seasonal High Water)</div> <div>▽ WL (Stabilized)</div> </div>	<div> <div>Dry</div> </div>	<div> <div>BORING STARTED: Aug 09 2022</div> <div>BORING COMPLETED: Aug 09 2022</div> <div>EQUIPMENT: Truck #1</div> </div>	<div> <div>CAVE IN DEPTH:</div> <div>HAMMER TYPE:</div> <div>DRILLING METHOD: Solid Stem Auger</div> </div>

GEOTECHNICAL BOREHOLE LOG




CLIENT: <b>Carlson Consulting Engineers, Inc.</b>				PROJECT NO.: <b>58:1518</b>		BORING NO.: <b>B-06</b>		SHEET: <b>1 of 1</b>		
PROJECT NAME: <b>Coweta Trails Phase II</b>				DRILLER/CONTRACTOR: <b>Drilling Services of Oklahoma</b>						
SITE LOCATION: <b>11954 S 273rd E Avenue, Coweta, Oklahoma 74429</b>								LOSS OF CIRCULATION 		
NORTHING: <b>975024.0</b>		EASTING: <b>2656708.7</b>		STATION:		SURFACE ELEVATION: <b>663.00</b>		BOTTOM OF CASING 		

DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		ROCK QUALITY DESIGNATION & RECOVERY		WATER CONTENT % [FINES CONTENT] %	
									⊗	×	—	—	●	△
									20 40 60 80 100		1 2 3 4 5		10 20 30 40 50	
					Topsoil Thickness[6"]									
	S-1	SS	18	18	(CL) LEAN CLAY, orangish brown to brown, black, and light gray to brown and black to brown, orangish brown and gray, moist, firm to stiff to hard, auger refusal at approximately 17 feet on presumed Weathered Limestone			4-3-4 (7)	⊗ 7					
5	S-2	SS	18	18				3-3-4 (7)	⊗ 7				16	46
	S-3	SS	18	18				3-3-3 (6)	⊗ 6				17.8	[85.9%]
10	S-4	SS	18	18				5-7-8 (15)	⊗ 15				16.4	
15	S-5	SS	18	18				12-16-25 (41)	⊗ 41				15.4	
					AUGER REFUSAL AT 17.0 FT									
20														
25														
30														





THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL

<div><input checked="" type="checkbox"/> WL (First Encountered)</div> <div><input checked="" type="checkbox"/> WL (Completion)</div> <div><input checked="" type="checkbox"/> WL (Seasonal High Water)</div> <div><input checked="" type="checkbox"/> WL (Stabilized)</div>	<div><b>Dry</b></div>	<div>BORING STARTED: <b>Aug 09 2022</b></div> <div>BORING COMPLETED: <b>Aug 09 2022</b></div> <div>EQUIPMENT: <b>Truck #1</b></div>	<div>CAVE IN DEPTH:</div> <div>HAMMER TYPE:</div> <div>DRILLING METHOD: <b>Solid Stem Auger</b></div>
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**GEOTECHNICAL BOREHOLE LOG**

CLIENT: <b>Carlson Consulting Engineers, Inc.</b>				PROJECT NO.: <b>58:1518</b>		BORING NO.: <b>B-07</b>		SHEET: <b>1 of 1</b>		
PROJECT NAME: <b>Coweta Trails Phase II</b>				DRILLER/CONTRACTOR: <b>Drilling Services of Oklahoma</b>						
SITE LOCATION: <b>11954 S 273rd E Avenue, Coweta, Oklahoma 74429</b>								LOSS OF CIRCULATION 		
NORTHING: <b>975150.1</b>		EASTING: <b>2656553.4</b>		STATION:		SURFACE ELEVATION: <b>665.00</b>		BOTTOM OF CASING 		














DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		ROCK QUALITY DESIGNATION & RECOVERY		CALIBRATED PENETROMETER TSF		WATER CONTENT % [FINES CONTENT] %				
									20	40	60	80	100	1		2	3	4	5
	S-1	SS	18	18	Topsoil Thickness[6"] (CL) LEAN CLAY, brown, moist, firm			4-4-3 (7)		7					15.4				
	S-2	SS	18	18				3-4-4 (8)		8					25.0				
5					END OF BORING AT 5.0 FT		660												
10							655												
15							650												
20							645												
25							640												
30							635												











  

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL			
 WL (First Encountered)	<b>Dry</b>	BORING STARTED: <b>Aug 09 2022</b>	CAVE IN DEPTH:
 WL (Completion)		BORING COMPLETED: <b>Aug 09 2022</b>	HAMMER TYPE:
 WL (Seasonal High Water)		EQUIPMENT: <b>Truck #1</b>	LOGGED BY: <b>MOY</b>
 WL (Stabilized)		DRILLING METHOD: <b>Solid Stem Auger</b>	

<b>GEOTECHNICAL BOREHOLE LOG</b>			
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CLIENT: Carlson Consulting Engineers, Inc.				PROJECT NO.: 58:1518		BORING NO.: B-08		SHEET: 1 of 1				
PROJECT NAME: Coweta Trails Phase II				DRILLER/CONTRACTOR: Drilling Services of Oklahoma								
SITE LOCATION: 11954 S 273rd E Avenue, Coweta, Oklahoma 74429								LOSS OF CIRCULATION 				
NORTHING: 975323.0		EASTING: 2656658.6		STATION:		SURFACE ELEVATION: 662.00		BOTTOM OF CASING 				
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		CALIBRATED PENETROMETER TSF	
									ROCK QUALITY DESIGNATION & RECOVERY			WATER CONTENT % [FINES CONTENT] %
									20 40 60 80 100		1 2 3 4 5	
	S-1	SS	18	18	Topsoil Thickness[6"] (CL) LEAN CLAY WITH SAND, brown, orangish brown, gray, and black, moist, firm			7-4-3 (7)			 16 13.9	 35 [78.0%]
	S-2	SS	18	18				4-4-4 (8)				
5					END OF BORING AT 5.0 FT		657					
10							652					
15							647					
20							642					
25							637					
30							632					
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL												
 WL (First Encountered)		Dry		BORING STARTED: Aug 09 2022				CAVE IN DEPTH:				
 WL (Completion)				BORING COMPLETED: Aug 09 2022				HAMMER TYPE:				
 WL (Seasonal High Water)				EQUIPMENT: Truck #1		LOGGED BY: MOY		DRILLING METHOD: Solid Stem Auger				
 WL (Stabilized)												
GEOTECHNICAL BOREHOLE LOG												

CLIENT: Carlson Consulting Engineers, Inc.				PROJECT NO.: 58:1518		BORING NO.: B-09		SHEET: 1 of 1					
PROJECT NAME: Coweta Trails Phase II				DRILLER/CONTRACTOR: Drilling Services of Oklahoma									
SITE LOCATION: 11954 S 273rd E Avenue, Coweta, Oklahoma 74429								LOSS OF CIRCULATION 					
NORTHING: 975114.2		EASTING: 2656780.3		STATION:		SURFACE ELEVATION: 662.00		BOTTOM OF CASING 					
DEPTH (FT)	SAMPLE NUMBER	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	WATER LEVELS	ELEVATION (FT)	BLOWS/6"	STANDARD PENETRATION BLOWS/FT		ROCK QUALITY DESIGNATION & RECOVERY	LIQUID LIMIT PLASTIC LIMIT	
									20 40 60 80 100			1 2 3 4 5	
										CALIBRATED PENETROMETER TSF		WATER CONTENT % [FINES CONTENT] %	
										RQD REC		10 20 30 40 50	
	S-1	SS	18	18	Topsoil Thickness[6"] (CL) LEAN CLAY WITH SAND, brown and black, moist, firm			3-4-4 (8)		8		13 18.3	31 [82.8%]
	S-2	SS	18	18				3-3-4 (7)		7			
5	END OF BORING AT 5.0 FT						657						
10							652						
15							647						
20							642						
25							637						
30							632						
THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL													
 WL (First Encountered)		Dry		BORING STARTED: Aug 09 2022		CAVE IN DEPTH:							
 WL (Completion)				BORING COMPLETED: Aug 09 2022		HAMMER TYPE:							
 WL (Seasonal High Water)				EQUIPMENT: Truck #1		LOGGED BY: MOY							
 WL (Stabilized)						DRILLING METHOD: Solid Stem Auger							
GEOTECHNICAL BOREHOLE LOG													



## **APPENDIX C – Laboratory Testing**

Laboratory Testing Summary

# Laboratory Testing Summary

Sample Source	Sample Number	Start Depth (feet)	End Depth (feet)	Sample Distance (feet)	MC <sup>1</sup> (%)	Soil Type <sup>2</sup>	Atterberg Limits <sup>3</sup>			Percent Passing No. 200 Sieve <sup>4</sup>	Moisture - Density (Corr.) <sup>5</sup>		CBR Value <sup>6</sup>	Organic Content
							LL	PL	PI		Maximum Density (pcf)	Optimum Moisture (%)		
B-01	S-1	1.0	2.5	1.5	13.2									
B-01	S-2	3.5	5.0	1.5	17.6									
B-01	S-3	6.0	7.5	1.5	22.1	CL	46	17	29	88.2				
B-01	S-5	13.5	15.0	1.5	16.2									
B-02	S-1	1.0	2.5	1.5	14.1									
B-02	S-2	3.5	5.0	1.5	26.3									
B-02	S-3	6.0	7.5	1.5	23.6	CL	43	14	29	87.3				
B-02	S-4	8.5	10.0	1.5	16.9									
B-03	S-2	3.5	5.0	1.5	22.7	CL	45	16	29	89.5				
B-03	S-3	6.0	7.5	1.5	15.6									
B-03	S-4	8.5	10.0	1.5	26.0									
B-04	S-1	1.0	2.5	1.5	16.1	CL	44	15	29	89.8				
B-04	S-2	3.5	5.0	1.5	19.6									
B-04	S-3	6.0	7.5	1.5	25.3									
B-04	S-5	13.5	15.0	1.5	20.7									
B-05	S-1	1.0	2.5	1.5	23.4									
B-05	S-2	3.5	5.0	1.5	15.4									
B-05	S-3	6.0	7.5	1.5	13.4									

1. ASTM D 2216, 2. ASTM D 2487, 3. ASTM D 4318, 4. ASTM D 1140, 5. See test reports for test method, 6. See test reports for test method

MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content (ASTM D 2974)

**Project No.** 58:1518

**Project Name:** Coweta Trails Phase II

**PM:** Ethan Pollard

**PE:** Andrew Wilshire

**Printed On:** August 26, 2022



**ECS Southwest, LLP - Oklahoma City**

7801 N Robinson Ave, Suite D-8,  
Oklahoma City, OK 73116

Phone: 405-265-5501





**SECTION 01 30 00**  
**ADMINISTRATIVE REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General administrative requirements.
- B. Paper Document submittal.
- C. Electronic document submittal.
- D. Preconstruction meeting.
- E. Site mobilization meeting.
- F. Progress meetings.
- G. Submittals for review, information, and project closeout.
- H. Requests for Interpretation (RFI) procedures.
- I. Submittal procedures.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 72 00 - General Conditions of the Contract: Dates for applications for payment.
- B. Section 01 00 00 - General Requirements: IECC Energy Efficiency test reports.

**1.03 GENERAL ADMINISTRATIVE REQUIREMENTS**

- A. Comply with the requirements of this Section for coordination of execution of administrative tasks with timing of construction activities.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 DOCUMENT SUBMITTAL - GENERAL**

- A. Submittals shall be reviewed by the Architect within ten (10) business days from receipt and shall be returned to the Contractor for action or distribution.
  - 1. All Submittals shall be reviewed and approved – by stamp and/or signature - by the Contractor prior to submission to the Architect. Submittals received by the Architect and not approved by the Contractor will be returned without review or processing.
  - 2. Submittals that require review by the Architect's or Owner's Consultants shall be forwarded to the Consultant upon receipt by the Architect. The Consultant shall then have ten (10) business days from receipt of submittal to review and return to the Architect, whereupon the Architect shall forward the reviewed submittal to the Contractor. The Contractor shall take into account the additional time associated with this process when scheduling.
  - 3. Besides submittals for review, information, and closeout, this procedure applies to requests for information (RFIs), progress documentation, contract modification documents (e.g. supplementary instructions, change proposals, change orders), applications for payment, field reports and meeting minutes, Contractor's correction punchlist, and any other document any participant wishes to make part of the project record.

**3.02 PAPER DOCUMENT SUBMITTAL**

- A. Submit a minimum of five (5) copies of each submittal for the Architect's review and use in distribution to the Owner. Where the submittal will require review by the Architect's or Owner's Consultants, submit seven (7) copies of each submittal. The Architect shall return a minimum of three (3) copies upon completion of review process.

**3.03 ELECTRONIC DOCUMENT SUBMITTAL**

- A. All documents transmitted for purposes of administration of the contract may be in electronic (PDF) format and transmitted via e-mail.
- B. All electronic Submittals shall be sent to the Architect from the Contractor – electronic submittals from sub-contractors will not be accepted.
- C. All electronic submittals shall have the stamp and/or signature of approval by the Contractor indicating product or equipment submitted has been reviewed for compliance with Contract Documents.

- D. All electronic submittals shall be in 8-1/2 x 11 inches (Letter) format. No other page/paper size submittals will be accepted.
- E. Each electronic Submittal shall be no larger than 20 megabytes file size. Submittals with multiple PDF files that exceed this limit must be submitted in separate, smaller parts.
- F. All electronic Submittals shall be reviewed and returned in (PDF) format; no hard copies shall be provided. The General Contractor shall be responsible for any necessary reproduction and distribution of the reviewed electronic submittal to his sub-contractors.
- G. Electronic document requirements do not apply to samples or color selection charts.
- H. The Architect is not responsible for any delays in the review process due to:
  - 1. Misdirected or lost emails.
  - 2. Corrupted files, or files that otherwise, can not be opened.
  - 3. Non-legible or incomplete scans.
  - 4. Technical issues or difficulties with email servers outside of the Architect's office.
  - 5. Technical issues, difficulties, or outages of the Internet that occur outside of the Architect's office.

### **3.04 PRECONSTRUCTION MEETING**

- A. Architect or Oklahoma Housing Finance Agency (OHFA) shall schedule a meeting prior to start of construction.
- B. Attendance Required:
  - 1. Contractor.
  - 2. Owner.
  - 3. Architect.
  - 4. OHFA Representative.
  - 5. Special consultants.
  - 6. Contractor's superintendent.
  - 7. Major subcontractors.
- C. Agenda:
  - 1. Use of premises by Owner and Contractor.
  - 2. Owner's requirements and partial occupancy prior to completion.
  - 3. Review of list of Subcontractors, list of Products, schedule of values, and progress schedule.
  - 4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  - 5. Survey and building layout.
  - 6. Security and housekeeping procedures.
  - 7. Schedules.
  - 8. Application for payment procedures.
  - 9. Procedures for testing.
  - 10. Procedures for maintaining record documents.
- D. Record minutes and distribute copies within five business days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

### **3.05 PROGRESS MEETINGS**

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Attendance Required:
  - 1. Contractor.
  - 2. Owner.
  - 3. Architect.
  - 4. OHFA Representative.
  - 5. Contractor's superintendent.
  - 6. Major subcontractors.
- C. Agenda:
  - 1. Review of work progress.
  - 2. Field observations, problems, and decisions.

3. Identification of problems that impede, or will impede, planned progress.
  4. Review of submittals schedule and status of submittals.
  5. Maintenance of progress schedule.
  6. Corrective measures to regain projected schedules.
  7. Planned progress during succeeding work period.
  8. Maintenance of quality and work standards.
  9. Effect of proposed changes on progress schedule and coordination.
  10. Other business relating to work.
- D. Record minutes and distribute copies within five working days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

### **3.06 REQUESTS FOR INTERPRETATION (RFI)**

- A. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
    - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
    - b. Do not forward requests which solely require internal coordination between subcontractors.
- C. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
- D. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- E. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
- F. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.

### **3.07 SUBMITTALS FOR REVIEW**

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

### **3.08 SUBMITTALS FOR INFORMATION**

- A. When the following are specified in individual sections, submit them for information:
1. Design data.
  2. Sustainability design submittals and reports.
  3. Certificates.
  4. Test reports.
  5. Inspection reports.
  6. Manufacturer's instructions.
  7. Other types indicated.
- B. Submit for Architect's knowledge as contract administrator or for Owner.

### **3.09 SUBMITTALS FOR PROJECT CLOSEOUT**

- A. Submit Energy Audit Report when required.

- B. Submit Correction Punch List for Substantial Completion.
- C. Submit Final Correction Punch List for Substantial Completion.
- D. When the following are specified in individual sections, submit them at project closeout:
  - 1. Project record documents.
  - 2. Operation and maintenance data.
  - 3. Warranties.
  - 4. Bonds.
  - 5. Other types as indicated.
- E. Submit for Owner's benefit during and after project completion.

### **3.10 SUBMITTAL PROCEDURES**

- A. General Requirements:
  - 1. Use a separate transmittal for each item.
  - 2. Transmit using approved form.
  - 3. Sequentially identify each item. For revised submittals use original number and a sequential alphabetical suffix.
  - 4. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
  - 5. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
    - a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
  - 6. Schedule submittals to expedite the Project, and coordinate submission of related items.
  - 7. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
  - 8. Provide space for Contractor and Architect review stamps.
  - 9. When revised for resubmission, identify all changes made since previous submission.
  - 10. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
  - 11. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
  - 12. Submittals not requested will be recognized, and will be returned "Not Reviewed",
- B. Product Data Procedures:
  - 1. Submit only information required by individual specification sections.
  - 2. Collect required information into a single submittal.
  - 3. Submit concurrently with related shop drawing submittal.
  - 4. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:
  - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
  - 2. Do not reproduce Contract Documents to create shop drawings.
  - 3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
  - 1. Transmit related items together as single package.
  - 2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
  - 3. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.

### **3.11 SUBMITTAL REVIEW**

- A. Submittals for Review: Architect will review each submittal, and accept, or take other appropriate action.
- B. Submittals for Information: Architect will acknowledge receipt, but will take no other action.



- C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
  - 1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Architect's and consultants' actions on items submitted for review:
  - 1. Authorizing purchasing, fabrication, delivery, and installation:
    - a. "No Exceptions Taken", or language with same legal meaning.
    - b. "Exceptions Noted", or language with same legal meaning.
      - 1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
  - 2. Not Authorizing fabrication, delivery, and installation:
    - a. "Revise and Resubmit".
      - 1) Resubmit revised item, with review notations acknowledged and incorporated.
    - b. "Rejected".
      - 1) Submit item complying with requirements of Contract Documents.
- E. Architect's and consultants' actions on items submitted for information:
  - 1. Items for which no action was taken:
    - a. "No Action Taken" - to notify the Contractor that the submittal has been received for record only.

**END OF SECTION**



**SECTION 01 61 16**  
**VOLATILE ORGANIC COMPOUND (VOC) CONTENT RESTRICTIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Requirements for Indoor-Emissions-Restricted products.
- B. Requirements for VOC-Content-Restricted products.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 30 00 - Administrative Requirements: Submittal procedures.

**1.03 DEFINITIONS**

- A. Indoor-Emissions-Restricted Products: All products in the following product categories, whether specified or not:
  - 1. Interior paints and coatings applied on site.
  - 2. Interior adhesives and sealants applied on site, including flooring adhesives.
  - 3. Flooring.
  - 4. Composite wood.
  - 5. Products making up wall and ceiling assemblies.
  - 6. Thermal and acoustical insulation.
- B. VOC-Content-Restricted Products: All products in the following product categories, whether specified or not:
  - 1. Exterior and interior paints and coatings applied on site;.
  - 2. Exterior and interior adhesives and sealants applied on site, including flooring adhesives.
  - 3. Wet-applied roofing and waterproofing.
- C. Interior of Building: Anywhere inside the exterior weather barrier.
- D. Adhesives: All gunnable, trowelable, liquid-applied, and aerosol adhesives, whether specified or not; including flooring adhesives, resilient base adhesives, and pipe jointing adhesives.
- E. Sealants: All gunnable, trowelable, and liquid-applied joint sealants and sealant primers, whether specified or not; including firestopping sealants and duct joint sealers.
- F. Inherently Non-Emitting Materials: Products composed wholly of minerals or metals, unless they include organic-based surface coatings, binders, or sealants; and specifically the following:
  - 1. Concrete.
  - 2. Clay brick.
  - 3. Metals that are plated, anodized, or powder-coated.
  - 4. Glass.
  - 5. Ceramics.
  - 6. Solid wood flooring that is unfinished and untreated.

**1.04 REFERENCE STANDARDS**

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings; 2005 (Reapproved 2013).
- C. CAL (CDPH SM) - Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions From Indoor Sources Using Environmental Chambers; California Department of Public Health; v1.1, 2010.
- D. CARB (ATCM) - Airborne Toxic Control Measure to Reduce Formaldehyde Emissions from Composite Wood Products; California Air Resources Board; current edition.
- E. CARB (SCM) - Suggested Control Measure for Architectural Coatings; California Air Resources Board; 2007.
- F. CHPS (HPPD) - High Performance Products Database; Current Edition at [www.chps.net/](http://www.chps.net/).
- G. CRI (GLP) - Green Label Plus Testing Program - Certified Products; [www.carpet-rug.org](http://www.carpet-rug.org/); current edition.
- H. SCAQMD 1113 - South Coast Air Quality Management District Rule No.1113; current edition.

- I. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.
- J. SCS (CPD) - SCS Certified Products; current listings at [www.scs-certified.com](http://www.scs-certified.com).
- K. UL (GGG) - GREENGUARD Gold Certified Products; current listings at <http://productguide.ulenvironment.com/QuickSearch.aspx>.

## **1.05 SUBMITTALS**

- A. Product Data: For each VOC-restricted product used in the project, submit evidence of compliance.
- B. Sustainable Design Reporting: Submit evidence of compliance.
- C. Installer Certifications Regarding Prohibited Content: Require each installer of any type of product (not just the products for which VOC restrictions are specified) to certify that either 1) no adhesives, joint sealants, paints, coatings, or composite wood or agrifiber products have been used in the installation of installer's products, or 2) that such products used comply with these requirements.

## **1.06 QUALITY ASSURANCE**

- A. Indoor Emissions Standard and Test Method: CAL (CDPH SM), using New Single-Family Residence exposure scenario and the allowable concentrations specified in the method, and range of total VOC's after 14 days.
  - 1. Wet-Applied Products: State amount applied in mass per surface area.
  - 2. Paints and Coatings: Test tinted products, not just tinting bases.
  - 3. Evidence of Compliance: Acceptable types of evidence are the following;
    - a. Current UL (GGG) certification.
    - b. Current SCS (CPD) Floorscore certification.
    - c. Current SCS (CPD) Indoor Advantage Gold certification.
    - d. Current listing in CHPS (HPPD) as a low-emitting product.
    - e. Current CRI (GLP) certification.
    - f. Test report showing compliance and stating exposure scenario used.
  - 4. Product data submittal showing VOC content is NOT acceptable evidence.
  - 5. Manufacturer's certification without test report by independent agency is NOT acceptable evidence.
- B. VOC Content Test Method: 40 CFR 59, Subpart D (EPA Method 24), or ASTM D3960, unless otherwise indicated.
  - 1. Evidence of Compliance: Acceptable types of evidence are:
    - a. Report of laboratory testing performed in accordance with requirements.
    - b. Certification by manufacturer that product complies with requirements.
- C. Composite Wood Emissions Standard: CARB (ATCM) for ultra-low emitting formaldehyde (ULEF) resins.
  - 1. Evidence of Compliance: Acceptable types of evidence are:
    - a. Current SCS "No Added Formaldehyde (NAF)" certification; [www.scs-certified.com](http://www.scs-certified.com).
    - b. Report of laboratory testing performed in accordance with requirements.
    - c. Published product data showing compliance with requirements.
- D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS**

- A. All Products: Comply with the most stringent of Federal, State, and Local requirements, or these specifications.
- B. Indoor-Emissions-Restricted Products: Comply with Indoor Emissions Standard and Test Method, except for:
  - 1. Composite Wood, Wood Fiber, and Wood Chip Products: Comply with Composite Wood Emissions Standard or contain no added formaldehyde resins.
  - 2. Inherently Non-Emitting Materials.
- C. VOC-Content-Restricted Products: VOC content not greater than required by the following:
  - 1. Adhesives, Including Flooring Adhesives: SCAQMD 1168 Rule.

2. Joint Sealants: SCAQMD 1168 Rule.
3. Paints and Coatings: Each color; most stringent of the following:
  - a. 40 CFR 59, Subpart D.
  - b. SCAQMD 1113 Rule.
  - c. CARB (SCM).
4. Wet-Applied Roofing and Waterproofing: Comply with requirements for paints and coatings.

### **PART 3 EXECUTION**

#### **3.01 FIELD QUALITY CONTROL**

- A. Owner reserves the right to reject non-compliant products, whether installed or not, and require their removal and replacement with compliant products at no extra cost to Owner.
- B. Additional costs to restore indoor air quality due to installation of non-compliant products will be borne by Contractor.

**END OF SECTION**



**SECTION 033000**  
**CAST-IN-PLACE CONCRETE**

**PART 1 - GENERAL**

**1.1 SUMMARY**

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

**1.2 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Material certificates.
- B. Material test reports.
- C. Floor surface flatness and levelness measurements.

**1.4 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
  - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
- C. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
  - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5.
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- D. Concrete Testing Service: Owner engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

**PART 2 - PRODUCTS**

**2.1 FORM-FACING MATERIALS**

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

**2.2 STEEL REINFORCEMENT**

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Deformed-Steel Welded Wire Reinforcement: ASTM A 497/A 497M, flat sheet.

- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

## 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150 Type I/II, gray. Supplement with the following:
    - a. Fly Ash: ASTM C 618, Class F or C.
    - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, graded.
  - 1. Maximum Coarse-Aggregate Size: 1-1/2 inches (38 mm) nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M and potable.

## 2.4 ADMIXTURES

- A. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.5 WATERSTOPS

- A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch (19 by 25 mm).
- B. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch (10 by 19 mm).

## 2.6 VAPOR RETARDERS

- A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer's recommended adhesive or pressure-sensitive tape.

## 2.7 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.



- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
- G. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
  - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- H. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
  - 1. VOC Content: Curing and sealing compounds shall have a VOC content of 200 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## **2.8 RELATED MATERIALS**

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

## **2.9 CONCRETE MIXTURES**

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Cementitious Materials: Use fly ash, pozzolan, ground granulated blast-furnace slag, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 20 percent.
- C. Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing admixture in concrete, as required, for placement and workability.
- D. Proportion normal-weight concrete mixture as follows:
  - 1. Minimum Compressive Strength: As required by prints at 28 days.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.50 – footings; 0.45 – all other mixes
  - 3. Slump Limit: 4 inches (125 mm) or 8 inches (200 mm) for concrete with verified slump of 2 to 4 inches (50 to 100 mm) before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
  - 4. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
  - 5. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer.
    - a. Add water vapor reducing admixture per manufacturers specified dosage rate to ready mix truck at the batch plant, or jobsite before discharge, mix rapidly for 7 minutes. (Follow Manufacturer's Instructions).

## **2.10 FABRICATING REINFORCEMENT**

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

## **2.11 CONCRETE MIXING**

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

## **PART 3 - EXECUTION**

### **3.1 FORMWORK**

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

### **3.2 EMBEDDED ITEMS**

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

### **3.3 VAPOR RETARDERS**

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

### **3.4 STEEL REINFORCEMENT**

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

### **3.5 JOINTS**

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
  - 1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
- E. Waterstops: Install in construction joints and at other joints indicated according to manufacturer's written instructions.

### **3.6 CONCRETE PLACEMENT**

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
  - 1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
- C. Cold-Weather Placement: Comply with ACI 306.1.

- D. Hot-Weather Placement: Comply with ACI 301.

### 3.7 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
  - 1. Apply to concrete surfaces exposed to public view.
- C. 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.

### 3.8 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighen until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
  - 1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.
  - 2. Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 10-ft.- (3.05-m-) long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch (3.2 mm) at the gymnasium floor and 1/4" (6.4mm) at all other locations.

### 3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

- a. **Removal:** After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.
  - 4. **Curing and Sealing Compound:** Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.
- 3.10 CONCRETE SURFACE REPAIRS**
- A. **Defective Concrete:** Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- 3.11 FIELD QUALITY CONTROL**
- A. **Testing and Inspecting:** Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

**END OF SECTION 033000**

**SECTION 03 35 11**  
**CONCRETE FLOOR FINISHES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Curing Compounds.
- B. Clear penetrating sealers.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

**PART 2 PRODUCTS**

**2.01 COATINGS**

- A. Curing and Sealing Compound, Moisture Emission-Reducing, Membrane-Forming: Liquid, membrane-forming, clear sealer, for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
  - 1. Use this product to cure and seal all slabs to receive adhesively applied flooring.
  - 2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
  - 3. VOC Content: Less than 100 g/L.
  - 4. Solids Content: 25 percent, minimum.
  - 5. Manufacturers:
    - a. Master Builders Solutions; MasterKure CC 160 WB (formerly Kure-N-Seal): [www.master-builders-solutions.com](http://www.master-builders-solutions.com)
    - b. Or approved equal.
- B. Curing and Sealing Compound, Low Gloss: Liquid, membrane-forming, clear, non-yellowing acrylic; complying with ASTM C1315 Type 1 Class A.
  - 1. Application: Use at exposed slabs and toppings not scheduled to receive finish flooring.
  - 2. Vehicle: Water-based.
  - 3. VOC Content: OTC compliant.
  - 4. Manufacturers:
    - a. Dayton Superior Corporation; Cure & Seal 1315 EF: [www.daytonsuperior.com](http://www.daytonsuperior.com).
    - b. Euclid Chemical Company; DIAMOND CLEAR VOX: [www.euclidchemical.com](http://www.euclidchemical.com).

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that floor surfaces are acceptable to receive the work of this section.
- B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.

**3.02 GENERAL**

- A. Apply materials in accordance with manufacturer's instructions.

**3.03 COATING APPLICATION**

- A. Verify that surface is free of previous coatings, sealers, curing compounds, water repellents, laitance, efflorescence, fats, oils, grease, wax, soluble salts, residues from cleaning agents, and other impediments to adhesion.
- B. Verify that water vapor emission from concrete and relative humidity in concrete are within limits established by coating manufacturer.
- C. Protect adjacent non-coated areas from drips, overflow, and overspray; immediately remove excess material.
- D. Apply coatings in accordance with manufacturer's instructions, matching approved mock-ups for color, special effects, sealing and workmanship.

**END OF SECTION**



**SECTION 03 54 00**  
**CAST UNDERLAYMENT**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Liquid-applied self-leveling floor underlayment.
  - 1. Use gypsum-based type at all interior locations where indicated on the drawings.
    - a. For all UL Design fire-rated assemblies shown/referenced on the drawings, provide conforming gypsum-based underlayment material.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry.
- B. Section 09 65 00 - Resilient Flooring.

**1.03 REFERENCE STANDARDS**

- A. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2012.
- B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete; 1999 (Reapproved 2014).
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation, environmental limitations, and installation instructions.
- C. Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Instructions.

**1.05 QUALITY ASSURANCE**

- A. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer using manufacturer approved mixing and pumping equipment.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.

**1.07 FIELD CONDITIONS**

- A. Do not install underlayment until floor penetrations and peripheral work are complete.
- B. Maintain minimum ambient temperatures of 50 degrees F 24 hours before, during and 72 hours after installation of underlayment.
- C. During the curing process, ventilate spaces to remove excess moisture.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Gypsum Underlayment:
  - 1. ARDEX Engineered Cements; ARDEX K15: [www.ardexamericas.com](http://www.ardexamericas.com).
  - 2. Hacker Industries, Inc; FirmFill 2010: [www.hackerindustries.com](http://www.hackerindustries.com).
  - 3. Maxxon Corporation; Gyp-Crete 2000/3.2K: [www.maxxon.com](http://www.maxxon.com).
  - 4. USG; Levelrock® Series 2500 Floor Underlayment: [www.usg.com](http://www.usg.com).

**2.02 MATERIALS**

- A. Cast Underlayments, General:
  - 1. Comply with applicable code for combustibility or flame spread requirements.

- B. Gypsum-Based Underlayment: Gypsum based mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
  - 1. Compressive Strength: Minimum 3,000 pounds per square inch, tested per ASTM C472.
  - 2. Density: Maximum 120 pounds per cubic foot.
  - 3. Surface Burning Characteristics: Flame spread/Smoke developed/Fuel Contribution index of 0/0/0 in accordance with ASTM E84.
  - 4. Material shall not contain any source of nutrients to sustain mold growth.
- C. Aggregate: Dry, well graded, washed silica aggregate, approximately 1/8 inch in size and acceptable to underlayment manufacturer.
- D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.
- E. Primer: Manufacturer's recommended type.
- F. Joint and Crack Filler: Latex based filler, as recommended by manufacturer.

### **2.03 MIXING**

- A. Site mix materials in accordance with manufacturer's instructions.
- B. Add aggregate for areas where thickness will exceed 1-1/2 inch. Mix underlayment and water for at least two minutes before adding aggregate, and continue mixing to assure that aggregate has been thoroughly coated.
- C. Mix to self-leveling consistency without over-watering.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.

### **3.02 PREPARATION**

- A. Remove substrate surface irregularities. Fill voids and deck joints with filler. Finish smooth.
- B. Vacuum clean surfaces.
- C. Prime substrate in accordance with manufacturer's instructions. Allow to dry.
- D. Close floor openings.
- E. Expansion Joints: Allow expansion joints to continue through cast underlayment at same width as joint.

### **3.03 APPLICATION**

- A. Scheduling: Application of cast underlayment shall not occur until building is enclosed; including roof, windows, doors, and other fenestration.
  - 1. Install cast underlayment after drywall installation unless tenant finish requirements identify partitioning after the pour.
- B. Install underlayment in accordance with manufacturer's instructions.
- C. Pump or pour material onto substrate. Do not retemper or add water.
  - 1. Pump, move, and screed while the material is still highly flowable.
  - 2. Be careful not to create cold joints, except where authorized.
  - 3. Except at authorized cold joints, place as continuously as possible until application is complete.
- D. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.

### **3.04 CURING**

- A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
- B. Air cure in accordance with manufacturer's instructions.
  - 1. Ventilation and adequate heat shall be provided continuously to rapidly remove moisture from the area until the cast underlayment is dry.
    - a. Confirm with manufacturer on recommended drying time requirements.



- b. Test for dryness in accordance with manufacturer's instructions prior to conducting further work in area.

### **3.05 PROTECTION**

- A. Place temporary wood planking over cast underlayment wherever it will be subjected to heavy wheeled, or concentrated loads.
  - 1. Refer to manufacturer's recommendations for additional requirements for protection prior to finish floor installation.

**END OF SECTION**



## **SECTION 04 20 00**

### **UNIT MASONRY**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Concrete block.
- B. Clay facing brick.
- C. Mortar.
- D. Reinforcement and anchorage.
- E. Flashings.
- F. Accessories.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Brick veneer over wood framing.
- B. Section 07 25 00 - Weather Barriers: Water-resistive barriers applied to exterior face of backing sheathing or unit masonry substrate.
- C. Section 07 84 00 - Firestopping: Firestopping at penetrations of fire-rated masonry.
- D. Section 07 92 00 - Joint Sealants: Sealing control and expansion joints.

##### **1.03 REFERENCE STANDARDS**

- A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.
- B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- C. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a (Reapproved 2014).
- D. ASTM A951/A951M - Standard Specification for Steel Wire for Masonry Joint Reinforcement; 2016.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.
- F. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016.
- G. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2011.
- H. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.
- I. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).
- J. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2016.
- K. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2014a.
- L. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2016.
- M. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2016.
- N. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2005.
- O. BIA Technical Notes No. 18A - Accommodating Expansion of Brickwork; 2006.
- P. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls; 2005.
- Q. BIA Technical Notes No. 46 - Maintenance of Brick Masonry; 2005.

##### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for masonry units and masonry accessories.

- C. Samples: Submit four samples of facing brick units to illustrate color, texture, and extremes of color range.
- D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum three years of documented experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials such as mud, grease, or other debris.
  - 1. Concrete Masonry Units: Store cubes in single stacks on level ground, covered and protected from inclement weather.
  - 2. Veneer Brick: Inspect bricks upon delivery at site and immediately inform manufacturer or supplier of any observed defects.
  - 3. Protect bagged materials and brick siding units from rain and groundwater by covering and storing on pallets or other means.
  - 4. Carefully stack and store all flashings and metal trim to prevent creasing, twisting, or other damage.

### **PART 2 PRODUCTS**

#### **2.01 CONCRETE MASONRY UNITS**

- A. Concrete Block: Comply with referenced standards and as follows:
  - 1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
  - 2. Special Shapes: Provide non-standard blocks configured for headers, end return blocks, and other detailed conditions.
  - 3. Load-Bearing Units: ASTM C90, medium weight.
    - a. Refer to Storm Shelter Notes on the structural drawings for additional requirements or related information, if any.
    - b. Exposed Faces: Manufacturer's standard color and texture where indicated.

#### **2.02 BRICK UNITS**

- A. Manufacturers:
  - 1. Belden Brick: [www.beldenbrick.com](http://www.beldenbrick.com).
  - 2. Endicott Clay Products Co: [www.endicott.com](http://www.endicott.com).
  - 3. Meridian Brick LLC (formerly Boral USA); : [www.meridianbrick.com](http://www.meridianbrick.com).
  - 4. Sioux City Brick and Tile Co: [www.sioxcitybrick.com](http://www.sioxcitybrick.com)
  - 5. \_\_\_\_\_.
- B. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
  - 1. Color and texture: As selected by Owner.
  - 2. Actual size: 3-5/8 inches x 2-1/4 inches x 7-5/8 inches.

#### **2.03 MORTAR MATERIALS**

- A. Portland Cement: ASTM C150/C150M, Type I; color as required to produce approved color sample.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Mortar Aggregate: ASTM C144.
- D. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
- E. Water: Clean and potable.
- F. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
  - 1. Type: Type N.
  - 2. Color: Standard gray.

## 2.04 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: ASTM A615/A615M, Grade 40 (40,000 psi), deformed billet bars; galvanized.
- B. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.
- C. Single Wythe Joint Reinforcement: ASTM A951/A951M.
  - 1. Type: Truss or ladder.
  - 2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
  - 3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
- D. Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
  - 1. Type: Truss.
  - 2. Material: ASTM A1064/A1064M steel wire, mill galvanized to ASTM A641/A641M, Class 3.
  - 3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
- E. Residential Wall Ties: Corrugated formed sheet metal, 7/8 inch wide by 0.05 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to extend at least 1-1/2 inches into the veneer with at least 5/8 inch of mortar coverage from masonry face.
- F. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not less than 5/8 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.

## 2.05 THROUGH-WALL FLASHINGS

- A. Membrane Non-Asphaltic Flashing Materials:
  - 1. Composite Polymer Flashings - Self-Adhering: Composite PVC with Elvaloy KEE; 30 mil thick with pressure-sensitive adhesive and release paper.
    - a. Manufacturers:
      - 1) Nervastral Inc.; Nervastral 300 : [www.nervastral.com](http://www.nervastral.com).
      - 2) Wire-Bond Inc.; 30 Mil PVC Flashing: [www.wirebond.com](http://www.wirebond.com).
      - 3) Polyguard Products Inc.; Polyguard Thru Wall flashing Membrane: [www.polyguardproducts.com](http://www.polyguardproducts.com).
- B. Factory-Fabricated Flashing Corners and End Dams: by flashing manufacturer.
- C. Flashing Sealant/Adhesives: VOC-compliant sealants and adhesives as supplied or recommended by flashing manufacturer.
- D. Surface Conditioner: Water-based latex liquid for substrate preparation prior to installation of flashing membrane, as recommended by flashing manufacturer.
  - 1. Application temperature: 25 degrees (F) or above.
  - 2. Freezing Point: 14 degrees (F).
  - 3. VOC Content: Not to exceed 125 g/L.

## 2.06 ACCESSORIES

- A. Preformed Control Joints: Neoprene material. Provide with corner and tee accessories, fused joints.
- B. Joint Filler: Closed cell polyethylene; oversized 50 percent to joint width; self expanding, by maximum lengths available
- C. Weeps:
  - 1. Type: Polyester mesh.
  - 2. Manufacturers:
    - a. CavClear, a Division of Archovations Inc; Weep Vent: [www.cavclear.com](http://www.cavclear.com).
    - b. Mortar Net Solutions; WeepVent: [www.mortarnet.com](http://www.mortarnet.com).
- D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
  - 1. Manufacturers:

- a. PROSOCO Inc.; SureKlean No. 600: [www.prosoco.com](http://www.prosoco.com)
  - b. Dietrich Technologies Inc.; 202 New Masonry Detergent: [www.dietrichtechnologies.com](http://www.dietrichtechnologies.com).
  - c. Cleans It All Global Inc; Envirosafe Mansonry Cleaner: [www.cleansitall.com](http://www.cleansitall.com).
- E. Penetrating Water Repellent: Penetrating, water-based silicone water repellent for concrete and masonry.
  - 1. Manufacturers:
    - a. PROSOCO Inc.; Sure Klean Weather Seal Siloxane: [www.prosoco.com](http://www.prosoco.com)
    - b. Applied Technologies; A-Tech Masonry and Brick Sealer: [www.appliedtechnologies.com](http://www.appliedtechnologies.com).
    - c. Pecora Corp.; KlereSeal 910-W/920-W: [www.pecora.com](http://www.pecora.com).

## **2.07 MORTAR MIXING**

- A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
  - 1. Exterior, non-loadbearing masonry: Type N.
- B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
- C. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.
- D. Mixing: Use mechanical batch mixer and comply with referenced standards.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive masonry.
- B. Verify that related items provided under other sections are properly sized and located.

### **3.02 PREPARATION**

- A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

### **3.03 COLD AND HOT WEATHER REQUIREMENTS**

- A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.
- B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

### **3.04 COURSING**

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Concrete Masonry Units:
  - 1. Bond: Running.
  - 2. Coursing: One unit and one mortar joint to equal 8 inches, vertical dimension typical.
  - 3. Mortar Joints: 3/8 inch Concave/Rodded.
- D. Brick Units:
  - 1. Bond: Running.
  - 2. Coursing: Three units and three mortar joints to equal 8 inches.
  - 3. Mortar Joints: 3/8 inch Concave/Rodded.

### **3.05 PLACING AND BONDING**

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.

- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar and mortar smears as work progresses.
- E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
- F. Interlock intersections and external corners.
- G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- I. Horizontal surfaces exposed to weather: Where water may collect on ledges, caps, or other horizontal surfaces, uniformly slope top surface to provide positive drainage.

### **3.06 WEEPS**

- A. Install weeps in cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

### **3.07 REINFORCEMENT AND ANCHORAGE - GENERAL**

- A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 24 inches on center.
- B. Place masonry joint reinforcement in first horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
- C. Place continuous joint reinforcement in first joint below top of walls.
- D. Lap joint reinforcement ends minimum 6 inches.

### **3.08 REINFORCEMENT AND ANCHORAGES - MULTIPLE WYTHE UNIT MASONRY**

- A. Use individual metal ties installed in horizontal joints to bond wythes together. Provide ties spaced as indicated on drawings.
- B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.

### **3.09 MASONRY FLASHINGS**

- A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
  - 1. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up flashing ends at least 4 inches, minimum, to form watertight pan at nonmasonry construction.
  - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
  - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend plastic, laminated, and EPDM flashings to within 1/4 inch of exterior face of masonry.
- C. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.
- D. Install flashing to dry surfaces at air and surface temperatures 25° F and above in accordance with manufacturer's written installation instructions at locations indicated on the Drawings.
- E. Precut pieces of flashing to easily handled lengths for each location.
  - 1. Remove silicone-coated release paper and position flashing carefully before placing in against the surface.
  - 2. When properly positioned, place against surface by pressing firmly into place by hand roller. Fully adhere flashing to substrate to prevent water from migrating under flashing.
  - 3. Overlap adjacent pieces 2 inches and roll all seams with a steel hand roller.
  - 4. Trim bottom edge 1/2 inch back from exposed face of the wall. Flashing shall not be permanently exposed to sunlight.
  - 5. At heads, sills and all flashing terminations turn up ends a minimum of 2 inches and make careful folds to form an end dam, with seams sealed, or use pre-formed end dams, with seams sealed.

6. Apply a bead or trowel coat of mastic along flashing top edge, seams, cuts and penetrations.
- F. Do not expose flashing membrane to sunlight for more than thirty days prior to enclosure.
- G. When required by dusty or dirty site conditions or by surfaces having irregular or rough texture, apply surface conditioner by spray, brush or roller at the rate recommended by manufacturer, prior to flashing installation.
  1. Allow surface to dry completely before flashing installation.

### **3.10 LINTELS**

- A. Install loose steel lintels over masonry openings where indicated on the drawings.
- B. Maintain minimum 8 inch bearing on each side of opening.

### **3.11 CONTROL AND EXPANSION JOINTS**

- A. Comply with the provisions of BIA Technical Notes No. 18A except where exceeded by the requirements of the Contract Documents.
- B. Vertical expansion joints shall be located/installed as shown on the Drawings and/or in accordance with the following:
  1. For brickwork without openings, space expansion joints no more than 25 feet o.c.
  2. For brickwork with multiple openings (doors, windows, etc.) consider symmetrical placement of expansion joints and spacing of expansion joints no more than 20 feet o.c.
  3. Expansion joints shall be located/installed:
    - a. At or near corners.
    - b. At offsets or setbacks.
    - c. At wall intersections.
    - d. At changes in wall height.
- C. Horizontal expansion joints shall be located immediately below shelf angles. A minimum of 1/4 inch space for compressible material is required below shelf angle.
- D. Do not continue horizontal joint reinforcement through control or expansion joints.
- E. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
- F. Form expansion joint as detailed on the Drawings, or in accordance with BIA Technical Notes No. 18A.
- G. Uniformly install rod at level recommended by sealant manufacturer (minimum – depth of joint after backer rod is installed is one half the width).

### **3.12 TOLERANCES**

- A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
- C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
- D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
- E. Maximum Variation of Mortar Joint Thickness: 1/8 inch in 3 ft.

### **3.13 CUTTING AND FITTING**

- A. Cut and fit for pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

### **3.14 CLEANING - GENERAL**

- A. Clean work upon completion of each days work.
- B. Remove excess mortar, droppings, and mortar smears.
- C. Replace defective mortar. Match adjacent work.
- D. Clean soiled surfaces with cleaning solution.



- E. Keep walls clean daily during installation using brushes as harsh cleaning methods after walls have been erected may mar the surface of the masonry.
  - 1. Do not allow excess mortar lumps or smears to harden on the finished surfaces.
- F. Use non-metallic tools in cleaning operations.

### **3.15 PROTECTION**

- A. A. Protect finished Work from damage from construction activities.
  - 1. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

### **3.16 CLEANING - FINAL**

- A. Clean the completed walls with masonry cleaner, strictly following the manufacturer's instructions including thorough rinsing.
- B. Do not use acid or abrasives for general cleaning of the finished surfaces.
  - 1. ONLY for stubborn mortar stains or smears, a 15:1 solution of water and a concentrated, general-purpose acidic cleaner may be used as long as the walls are thoroughly wetted before applying the cleaning solution and thoroughly rinsed with clean water immediately after washing.
- C. Failure to strictly follow these and manufacturer's instructions that results in permanent damage to the finished face and requires repair and/or replacement of material will be the responsibility of and at the cost of the Contractor.

**END OF SECTION**



**SECTION 051200**  
**STRUCTURAL STEEL FRAMING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes structural steel and grout.
- B. Related Sections:
  - 1. Division 05 Section "Architecturally Exposed Structural Steel Framing" for additional requirements for architecturally exposed structural steel.

**1.2 DEFINITIONS**

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
- B. Moment Connections: Type FR, fully restrained.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication of structural-steel components.

**1.4 INFORMATIONAL SUBMITTALS**

- A. Qualification Data: For qualified Installer, fabricator, and testing agency.
- B. Welding certificates.
- C. Mill test reports for structural steel, including chemical and physical properties.
- D. Source quality-control reports.

**1.5 QUALITY ASSURANCE**

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with applicable provisions of the following specifications and documents:
  - 1. AISC 303.
  - 2. AISC 360.
  - 3. RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."

**PART 2 - PRODUCTS**

**2.1 STRUCTURAL-STEEL MATERIALS**

- A. W-Shapes: ASTM A 572/A 572M, Grade 50 (345).
- B. Channels, Angles, M, S-Shapes: ASTM A 36/A 36M.
- C. Plate and Bar: ASTM A 36/A 36M.
- D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
- E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
- F. Welding Electrodes: Comply with AWS requirements.

**2.2 BOLTS, CONNECTORS, AND ANCHORS**

- A. High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, (ASTM A 563M, Class 8S) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers; all with plain finish.
  - 1. Direct-Tension Indicators: ASTM F 959, Type 325 (ASTM F 959M, Type 8.8), compressible-washer type with plain finish.

- B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F 1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, heavy-hex carbon-steel nuts, and hardened carbon-steel washers.
  - 1. Finish: Plain.
- C. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.
- D. Unheaded Anchor Rods: ASTM F 1554, Grade 36.
  - 1. Configuration: Straight.
  - 2. Finish: Plain.
- E. Headed Anchor Rods: ASTM F 1554, Grade 36, straight.
  - 1. Finish: Plain.
- F. Threaded Rods: ASTM A 36/A 36M.
  - 1. Finish: Plain.

### **2.3 PRIMER**

- A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

### **2.4 GROUT**

- A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

### **2.5 FABRICATION**

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
- B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

### **2.6 SHOP CONNECTIONS**

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
  - 1. Joint Type: Snug tightened.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

### **2.7 SHOP PRIMING**

- A. Shop prime steel surfaces except the following:
  - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
  - 2. Surfaces to be field welded.
  - 3. Surfaces to be high-strength bolted with slip-critical connections.
  - 4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
  - 5. Galvanized surfaces.
- B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
  - 1. SSPC-SP 2, "Hand Tool Cleaning."
  - 2. SSPC-SP 3, "Power Tool Cleaning."

- C. Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

## **2.8 SOURCE QUALITY CONTROL**

- A. Testing Agency: Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
  - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
  - 1. Liquid Penetrant Inspection: ASTM E 165.
  - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
  - 3. Ultrasonic Inspection: ASTM E 164.
  - 4. Radiographic Inspection: ASTM E 94.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedded items for compliance with requirements.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 ERECTION**

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Base Bearing 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 Pretension anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
  - 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

### **3.3 FIELD CONNECTIONS**

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
  - 1. Joint Type: Snug tightened.

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

- 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

### **3.4 FIELD QUALITY CONTROL**

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.
- B. Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
- D. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

**END OF SECTION 051200**

**SECTION 05 50 00**  
**METAL FABRICATIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Shop fabricated steel and aluminum items, including:
  - 1. Bollards.
  - 2. Lintels and angles.
  - 3. Trash enclosure gate frames.
- B. Prefabricated Aluminum Column Covers.
- C. Miscellaneous structural connectors.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 04 20 00 - Unit Masonry: Placement of metal fabrications in masonry.
- C. Section 06 10 00 - Rough Carpentry.
- D. Section 09 91 13 - Exterior Painting: Paint finish.

**1.03 REFERENCE STANDARDS**

- A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2015.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- E. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2013.
- F. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014.
- G. ASTM B85/B85M - Standard Specification for Aluminum-Alloy Die Castings; 2013.
- H. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.
- I. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- J. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- K. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions; 2015a.
- L. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2014.
- M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (Errata 2016).
- N. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- O. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); 2002 (Ed. 2004).
- P. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product data: Submit manufacturer's data on products showing compliance with specified requirements and installation instructions.

- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
- D. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

## **PART 2 PRODUCTS**

### **2.01 MATERIALS - STEEL**

- A. Steel Sections: ASTM A36/A36M.
- B. Plates: ASTM A283/A283M.
- C. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- D. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.
- E. Bolts, Nuts, and Washers: ASTM A307, Grade A, plain.
- F. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- G. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

### **2.02 MATERIALS - ALUMINUM**

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Die Castings: ASTM B85/B85M.
- D. Bolts, Nuts, and Washers: Stainless steel.

### **2.03 FABRICATION**

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- D. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- E. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

### **2.04 FABRICATED ITEMS**

- A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
- B. Shelf Angles and Lintels Not Attached to Structural Framing: For support of masonry; galvanized finish.
- C. Trash enclosure gate frames : As detailed; steel, galvanized finish.

### **2.05 PREFABRICATED COLUMN COVERS**

- A. Architectural Aluminum Column Covers; Pre-finished aluminum column covers with decorative top and bottom trim; round, tapered.
  - 1. Height and Size: As shown on the Drawings.
  - 2. Style, design and color as selected by Owner from manufacturers standard production line.
  - 3. Manufacturers:
    - a. Colonial Elegance Inc.: [www.colonialegance.com](http://www.colonialegance.com).
    - b. AFco Industries Inc.: [www.afco-ind.com](http://www.afco-ind.com).
    - c. Worthington Millwork Inc.: [www.worthingtonmillwork.com](http://www.worthingtonmillwork.com)
    - d. Or approved equal.



## **2.06 FINISHES - STEEL**

- A. Prime paint steel items.
  - 1. Exceptions: Galvanize items to be embedded in concrete and items to be imbedded in masonry.
  - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

## **2.07 FINISHES - ALUMINUM**

- A. Exterior Aluminum Surfaces: pigmented organic coating.
- B. Pigmented Organic Coating System: AAMA 2603 polyester or acrylic baked enamel finish; color as indicated.

## **2.08 FABRICATION TOLERANCES**

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- A. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

### **3.03 INSTALLATION**

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Obtain approval prior to site cutting or making adjustments not scheduled.
- D. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

### **3.04 TOLERANCES**

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

**END OF SECTION**



**SECTION 05 52 13**  
**PIPE AND TUBE RAILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Wall mounted handrails.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Installation of blocking for wall-mounted rails and guards.
- B. Section 09 91 23 - Interior Painting: Paint finish.

**1.03 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- C. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2013.
- D. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).
- E. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
- F. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Store shop-fabricated components under waterproof cover and elevated above grade, on a flat surface.
- B. Separate components with solid blocking to minimize damage to shop-applied primer.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Accessibility-Compliant Handrail Brackets:
  - 1. Julius Blum & Co; Model #1382: [www.juliusblum.com](http://www.juliusblum.com).
  - 2. Or approved equal.

**2.02 RAILINGS - GENERAL REQUIREMENTS**

- A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.
- B. Concentrated Loads: Design wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E935.
- C. Allow for expansion and contraction of members and building movement without damage to connections or members.
- D. Dimensions: See drawings for Pipe and Tube railing configurations and heights.
  - 1. Hand Rails and Wall Rails: 1-1/2 inches, diameter round.
- E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
  - 1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.
  - 2. For anchorage to stud walls, provide backing plates, for bolting anchors.
  - 3. Posts: Provide adjustable flanged brackets.
- F. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

- G. Finish: Shop-primed painted.

## **2.03 STEEL MATERIALS**

- A. Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.
- B. Welding Fittings: Factory or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.
- C. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
- D. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

## **2.04 FABRICATION**

- A. Accurately form components to suit specific project conditions and for proper connection to building structure.
- B. Fit and shop assemble components in largest practical sizes for delivery to site.
- C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
- D. Welded Joints:
  - 1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
  - 2. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

## **2.05 SHOP FINISHING**

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

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

## **3.02 PREPARATION**

- A. Clean and strip primed steel items to bare metal where site welding is required.
- B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

## **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
- C. Install railings in compliance with UFAS and ADA Standards for accessible design at applicable locations.
- D. Anchor railings securely to structure.
- E. Field weld anchors as indicated on shop drawings. Grind welds smooth; Touch-up welds with primer.
- F. Conceal anchor bolts and screws whenever possible.

## **3.04 TOLERANCES**

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

**END OF SECTION**





**SECTION 061000  
ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 SUMMARY**

**A. Section Includes:**

1. Framing with dimension lumber.
2. Framing with engineered wood products.
3. Shear wall panels.
4. Rooftop equipment bases and support curbs.
5. Wood blocking, cants, and nailers.
6. Wood furring and grounds.
7. Wood sleepers.
8. Plywood backing panels.

**1.2 ACTION SUBMITTALS**

**A. Product Data:** For each type of process and factory-fabricated product.

1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements
2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.

**1.3 INFORMATIONAL SUBMITTALS**

**A. Material Certificates:** For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.

**B. Evaluation Reports:** For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
4. Shear panels.
5. Power-driven fasteners.
6. Powder-actuated fasteners.
7. Expansion anchors.
8. Metal framing anchors.

**PART 2 - PRODUCTS**

**2.1 WOOD PRODUCTS, GENERAL**

**A. Certified Wood:** Materials shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship for the following:

1. Dimension lumber framing.
2. Laminated-veneer lumber.
3. Parallel-strand lumber.
4. Prefabricated wood I-joists.
5. Rim boards.

**6. Miscellaneous lumber.**

- B. 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, mark grade stamp on end or back of each piece.**
  - 3. Provide dressed lumber, S4S, unless otherwise indicated.**
- C. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.**
- D. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.**
  - 1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, which meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.**

**2.2 WOOD-PRESERVATIVE-TREATED LUMBER**

- A. Preservative Treatment by Pressure Process: AWP A 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.**
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.**
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.**
- D. Application: Treat items indicated on Drawings, and the following:**
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.**
  - 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.**
  - 3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.**
  - 4. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.**
  - 5. Wood floor plates that are installed over concrete slabs-on-grade.**

**2.3 FIRE-RETARDANT-TREATED MATERIALS**

- A. General: Where fire-retardant-treated materials are indicated, 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 (3.2 m) beyond the centerline of the burners at any time during the test.
  - 1. **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.
  - 2. **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.
- C. **Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.**
- D. **Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.**
- E. **Application: Treat items indicated on Drawings, and the following:**
  - 1. **Framing for raised platforms.**
  - 2. **Framing for stages.**
  - 3. **Concealed blocking.**
  - 4. **Framing for non-load-bearing partitions.**
  - 5. **Framing for non-load-bearing exterior walls.**
  - 6. **Roof construction.**
  - 7. **Plywood backing panels.**

#### **2.4 DIMENSION LUMBER FRAMING**

- A. **Non-Load-Bearing Interior Partitions: Standard, Stud, or No. 3 grade.**
  - 1. **Application: Interior partitions not indicated as load-bearing.**
  - 2. **Species:**
    - a. **Mixed southern pine; SPIB.**
    - b. **Northern species; NLGA.**
    - c. **Eastern softwoods; NeLMA.**
    - d. **Western woods; WCLIB or WWPA.**
- B. **Framing Other Than Non-Load-Bearing Interior Partitions: As shown on the drawings.**
  - 1. **Application: Framing other than interior partitions not indicated as load-bearing.**
  - 2. **Species:**
    - a. **Hem-fir (north); NLGA.**
    - b. **Southern pine; SPIB.**
    - c. **Douglas fir-larch; WCLIB or WWPA.**
    - d. **Mixed southern pine; SPIB.**
    - e. **Spruce-pine-fir; NLGA.**
    - f. **Douglas fir-south; WWPA.**
    - g. **Hem-fir; WCLIB or WWPA.**
    - h. **Douglas fir-larch (north); NLGA.**
    - i. **Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.**

- C. **Exposed Framing:** Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
  - 1. **Application:** Exposed exterior and interior framing indicated to receive a stained or natural finish.
  - 2. **Species and Grade:** As indicated above for load-bearing construction of same type.

## **2.5 ENGINEERED WOOD PRODUCTS**

- A. **Engineered Wood Products, General:** Products shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. **Laminated-Veneer Lumber:** Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559.
  - 1. **Extreme Fiber Stress in Bending, Edgewise:** As shown on drawings.
  - 2. **Modulus of Elasticity, Edgewise:** As shown on drawings.
- C. **Wood I-Joists:** Prefabricated units, I-shaped in cross section, made with solid or structural composite lumber flanges and wood-based structural panel webs, let into and bonded to flanges. Provide units complying with material requirements of and with structural capacities established and monitored according to ASTM D 5055.
  - 1. **Web Material:** Either oriented strand board or plywood, complying with DOC PS 1 or DOC PS 2, Exposure.
  - 2. **Structural Properties:** Provide units with depths and design values not less than those indicated.
  - 3. **Provide units complying with APA PRI-400, factory marked with APA trademark indicating nominal joist depth, joist class, span ratings, mill identification, and compliance with APA standard.**
- D. **Rim Boards:** Product designed to be used as a load-bearing member and to brace wood I-joists at bearing ends, complying with research/evaluation report for I-joists.
  - 1. **Material:** Product made from any combination solid lumber, wood strands, and veneers.
  - 2. **Thickness:** 1-1/4 inches (32 mm).
  - 3. **Provide performance-rated product complying with APA PRR-401, rim board grade, factory marked with APA trademark indicating thickness, grade, and compliance with APA standard.**

## **2.6 SHEAR WALL PANELS**

- A. **Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. **Shear Transfer Systems.**
  - 2. **Simpson Strong-Tie Co., Inc.**
  - 3. **Weyerhaeuser Company.**

**Wood-Framed Shear Wall Panels:** Prefabricated assembly consisting of wood perimeter framing, tie downs, and Exposure I, Structural I plywood or OSB sheathing.

4. Products shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. **Steel-Framed Shear Wall Panels:** Prefabricated assembly consisting of cold-formed galvanized steel panel, steel top and bottom plates, and wood studs.
- D. **Allowable Design Loads:** Provide products with allowable design loads, as published by manufacturer, which meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.

## **2.7 MISCELLANEOUS LUMBER**

- A. **General:** Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  1. Blocking.
  2. Nailers.
  3. Rooftop equipment bases and support curbs.
  4. Cants.
  5. Furring.
  6. Grounds.
- B. For items of dimension lumber size, provide Standard, Stud, or No. 3 grade lumber of any species.
- 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. Eastern softwoods; No. 2 Common grade; NeLMA.
  3. Northern species; No. 2 Common grade; NLGA.
  4. Western woods; Construction or No. 2 Common; WCLIB or WWPA.

## **2.8 PLYWOOD BACKING PANELS**

- A. **Equipment Backing Panels:** DOC PS 1, Exterior, AC in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm) nominal thickness.
  1. Plywood shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

## **2.9 FASTENERS**

- A. **General:** Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M or Type 304 stainless steel.
- B. **Power-Driven Fasteners:** NES NER-272.
- C. **Bolts:** Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.

## **2.10 METAL FRAMING ANCHORS**

- A. Manufacturers:** Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. Cleveland Steel Specialty Co.
  - 2. KC Metals Products, Inc.
  - 3. Phoenix Metal Products, Inc.
  - 4. Simpson Strong-Tie Co., Inc.
  - 5. USP Structural Connectors.
- C. Allowable Design Loads:** Provide products with allowable design loads, as published by manufacturer, which meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- D. Galvanized-Steel Sheet:** Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.
  - 1. Use for interior locations unless otherwise indicated.
- E. Hot-Dip, Heavy-Galvanized Steel Sheet:** ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 (Z550) coating designation; and not less than 0.036 inch (0.9 mm) thick.
  - 1. Use for wood-preservative-treated lumber and where indicated.

## **2.11 MISCELLANEOUS MATERIALS**

- A. Sill-Sealer Gaskets:** Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.
- B. Sill-Sealer Gaskets:** Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.
- C. Flexible Flashing:** Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber or rubberized-asphalt compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.025 inch (0.6 mm).

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Set rough carpentry** to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough 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. Framing Standard:** Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Framing with Engineered Wood Products:** Install engineered wood products to comply with manufacturer's written instructions.
- D. Install fire-retardant treated plywood backing panels** with classification marking of testing agency exposed to view.
- E. Shear Wall Panels:** Install shear wall panels to comply with manufacturer's written instructions.

- F. **Metal Framing Anchors:** Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- G. **Do not splice structural members between supports unless otherwise indicated.**
- H. **Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.**
- I. **Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.**
- J. **Securely attach rough 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 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 rough carpentry from weather. If, despite protection, rough carpentry becomes sufficiently wet that moisture content exceeds that specified, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.**

**END OF SECTION 061000**



**SECTION 061753**  
**SHOP-FABRICATED WOOD TRUSSES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:**
  - 1. Wood roof trusses.
  - 2. Wood floor trusses.
  - 3. Wood girder trusses.
  - 4. Wood truss bracing.
  - 5. Metal truss accessories.
- B. Allowances:** Provide wood truss bracing under the Metal-Plate-Connected Truss Bracing Allowance as specified in Division 01 Section "Allowances."

**1.2 ACTION SUBMITTALS**

- A. Product Data:** For metal-plate connectors, metal truss accessories, and fasteners.
- B. Shop Drawings:** Show fabrication and installation details for trusses.
  - 1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
  - 2. Indicate sizes, stress grades, and species of lumber.
  - 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
  - 6. Show splice details and bearing details.
- C. Delegated-Design Submittal:** For metal-plate-connected wood trusses indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

**1.3 INFORMATIONAL SUBMITTALS**

- A. Product certificates.**
- B. Evaluation Reports:** For the following, from ICC-ES:
  - 1. Metal-plate connectors.
  - 2. Metal truss accessories.

**1.4 QUALITY ASSURANCE**

- A. Metal Connector-Plate Manufacturer Qualifications:** A manufacturer that is a member of TPI and that complies with quality-control procedures in TPI 1 for manufacture of connector plates.
  - 1. Manufacturer's responsibilities include providing professional engineering services needed to assume engineering responsibility.
  - 2. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.
- B. Fabricator Qualifications:** Shop that [participates in a recognized quality-assurance program that complies with quality-control procedures in TPI 1 and that involves third-

party inspection by an independent testing and inspecting agency acceptable to Architect and authorities having jurisdiction.

#### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Handle and store trusses to comply with recommendations in TPI BCSI, "Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining, & Bracing Metal Plate Connected Wood Trusses."

### **PART 2 - PRODUCTS**

#### **2.1 PERFORMANCE REQUIREMENTS**

- A. Delegated Design: Engage a qualified professional engineer, as defined in Division 01 Section "Quality Requirements," to design metal-plate-connected wood trusses.
- B. Structural Performance: Provide metal-plate-connected wood trusses capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.

#### **2.2 DIMENSION LUMBER**

- A. Certified Wood: For metal-plate-connected wood trusses and permanent bracing, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
- B. 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. Provide dry lumber with 19 percent maximum moisture content at time of dressing.
- C. Permanent Bracing: Provide wood bracing that complies with requirements for miscellaneous lumber in Division 06 Section "Rough Carpentry."

#### **2.3 METAL CONNECTOR PLATES**

- A. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
  - 1. Alpine Engineered Products, Inc.; an ITW company.
  - 2. Cherokee Metal Products, Inc.; Masengill Machinery Company.
  - 3. CompuTrus, Inc.
  - 4. Eagle Metal Products.
  - 5. Jager Building Systems, Inc.; a Tembec/SGF Rexfor company.
  - 6. MiTek Industries, Inc.; a subsidiary of Berkshire Hathaway Inc.
  - 7. Robbins Engineering, Inc.
  - 8. Truswal Systems Corporation; an ITW company.
- B. General: Fabricate connector plates to comply with TPI 1.
- C. Hot-Dip Galvanized-Steel Sheet: ASTM A 653/A 653M; Structural Steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G60 (Z180) coating designation; and not less than 0.036 inch (0.9 mm) thick.

#### **2.4 FASTENERS**

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.



1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
2. Where trusses are exposed to weather, in ground contact, made from pressure-preservative treated wood, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Nails, Brads, and Staples: ASTM F 1667.

## **2.5 METAL FRAMING ANCHORS AND ACCESSORIES**

- A. **Manufacturers:** Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. **Basis-of-Design Product:** Subject to compliance with requirements, provide [product indicated on Drawings] <Insert manufacturer's name; product name or designation> or comparable product by one of the following:
  1. Cleveland Steel Specialty Co.
  2. KC Metals Products, Inc.
  3. Phoenix Metal Products, Inc.
  4. Simpson Strong-Tie Co., Inc.
  5. USP Structural Connectors.
- C. **Allowable Design Loads:** Provide products with allowable design loads, as published by manufacturer, that meet or exceed those [indicated] [of basis-of-design products] [of products of manufacturers listed]. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- D. **Galvanized-Steel Sheet:** Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.

## **2.6 FABRICATION**

- A. Assemble truss members in design configuration indicated; use jigs or other means to ensure uniformity and accuracy of assembly with joints closely fitted to comply with tolerances in TPI 1. Position members to produce design camber indicated.
  1. Fabricate wood trusses within manufacturing tolerances in TPI 1.
- B. Connect truss members by metal connector plates located and securely embedded simultaneously in both sides of wood members by air or hydraulic press.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install wood trusses only after supporting construction is in place and is braced and secured.
- B. If trusses are delivered to Project site in more than one piece, assemble trusses before installing.
- C. Hoist trusses in place by lifting equipment suited to sizes and types of trusses required, exercising care not to damage truss members or joints by out-of-plane bending or other causes.
- D. Install and brace trusses according to TPI recommendations and as indicated.
- E. Anchor trusses securely at bearing points; use metal truss tie-downs or floor truss hangers as applicable. Install fasteners through each fastener hole in metal framing anchors according to manufacturer's fastening schedules and written instructions.
- F. Securely connect each truss ply required for forming built-up girder trusses.

- G. Install and fasten permanent bracing during truss erection and before construction loads are applied. Anchor ends of permanent bracing where terminating at walls or beams.**
    - 1. Install bracing to comply with Division 06 Section "Rough Carpentry."**
    - 2. Install and fasten strongback bracing vertically against vertical web of parallel-chord floor trusses at centers indicated.**
  - H. Install wood trusses within installation tolerances in TPI 1.**
  - I. Do not alter trusses in field. Do not cut, drill, notch, or remove truss members.**
  - J. Replace wood trusses that are damaged or do not meet requirements.**
- END OF SECTION 061753**

**SECTION 06 20 00**  
**FINISH CARPENTRY**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Finish carpentry items.
- B. Wood casings and moldings.
- C. Cellular PVC casings and moldings (exterior).

**1.02 RELATED REQUIREMENTS**

- A. Section 04 20 00 - Unit Masonry.
- B. Section 06 10 00 - Rough Carpentry: Support framing, furring, and concealed blocking.
- C. Section 08 11 20 - Residential Steel Entry Doors.
- D. Section 08 14 16 - Wood Doors.
- E. Section 08 53 13 - Vinyl Windows.
- F. Section 09 91 23 - Interior Painting: Painting of finish carpentry items.

**1.03 REFERENCE STANDARDS**

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Samples: Submit two samples of wood trim 6 inch long.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Protect from moisture damage.
- B. Store flat, on level area, to prevent warping.

**PART 2 PRODUCTS**

**2.01 FINISH CARPENTRY ITEMS**

- A. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.
- B. Exterior Finish Carpentry Items:
  - 1. Manufacturers: Acceptable manufacturers of cellular PVC moldings and trim;
    - a. Azek Building Products; [www.azek.com](http://www.azek.com).
    - b. Wyton; [www.wyton.com](http://www.wyton.com).
    - c. Royal Building Products; [www.royalbuildingproducts.com](http://www.royalbuildingproducts.com).
  - 2. Door and Window Casings and Moldings at Masonry Veneer: Molded Cellular PVC; suitable for paint finish, in profiles scheduled below:
    - a. Door and Window trim: To match Azek Brick mould, 1-1/2 inch x 2 inch.
- C. Interior Finish Carpentry Items (Dwelling Units):
  - 1. Manufacturers: Acceptable millwork manufacturers of casings, molding and trim.
    - a. Woodgrain Millwork; [www.woodgrain.com](http://www.woodgrain.com).
    - b. Trimco Millwork; [www.trimcomillwork.com](http://www.trimcomillwork.com).
    - c. Metrie Inc.; [www.metrie.com](http://www.metrie.com)
  - 2. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine, solid or finger jointed; primed for paint finish, in profiles as scheduled below:
    - a. Door Trim: 1 1/16 inch x 2-1/4 inch Colonial Wood Casing.
    - b. Baseboard Trim: 9/16 inch by 5-1/4 inch Colonial Wood Base.
    - c. Window Sill: Furniture grade Clear White Pine, 1 inch x 4 inch nominal, back primed with eased edges.
- D. Interior Finish Carpentry Items (Common areas):
  - 1. Manufacturers: Acceptable millwork manufacturers of casings, molding and trim.
    - a. Woodgrain Millwork; [www.woodgrain.com](http://www.woodgrain.com).
    - b. Trimco Millwork; [www.trimcomillwork.com](http://www.trimcomillwork.com).

- c. Metrie Inc.; [www.metrei.com](http://www.metrei.com)
- 2. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine, solid or finger jointed; primed for paint finish, in profiles as scheduled below:
  - a. Door Trim: 1 1/16 inch x 2-1/4 inch Colonial Wood Casing.
  - b. Baseboard Trim: 9/16 inch by 5-1/4 inch Colonial Wood Base.
  - c. Window Sill: Furniture grade, 1 inch x 4 inch nominal, back primed with eased edges.

## **2.02 LUMBER MATERIALS**

- A. Softwood Lumber: Clear White Pine species, plain sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

## **2.03 CELLULAR PVC MOLDINGS AND TRIM**

- A. Cellular PVC Trim: Extruded, expanded PVC; UV-resistant, heat-stabilized, and rigid material.
  - 1. Density: 31 pounds per cubic foot, minimum.
  - 2. Flame Spread: ASTM E84, 75, maximum.

## **2.04 ACCESSORIES**

- A. Lumber for Shimming, Blocking, and Bracing: Softwood lumber of indicated species.
- B. Primer: As specified in Section 09 91 23.
- C. Wood Filler: Solvent base, tinted to match surface finish color.
- D. Epoxy Filler: As recommended by composite resin manufacturer, to match color of window sills.

## **2.05 FABRICATION**

- A. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify adequacy of backing and support framing.

## **3.02 INSTALLATION**

- A. Set and secure materials and components in place, plumb and level.
- B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- C. Install prefinished paneling with full bed contact adhesive applied to substrate.

## **3.03 PREPARATION FOR SITE FINISHING**

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: See Section 09 91 13 and 09 91 23.

## **3.04 TOLERANCES**

- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

**END OF SECTION**

**SECTION 06 66 00**  
**ORNAMENTAL SIMULATED WOODWORK**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Simulated Wood Louvers.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 07 46 46 - Fiber-Cement Siding
- C. Section 07 92 00 - Joint Sealants.

**1.03 REFERENCE STANDARDS**

- A. ASTM D1435 - Standard Practice for Outdoor Weathering of Plastics.
- B. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics; 2016.
- C. ASTM D2843 - Standard Test Method for Density of Smoke from the Burning or Decomposition of Plastics; 2016.
- D. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2010).
- E. ASTM D648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position; 2016.
- F. ASTM D6864 - Standard Specification for Color and Appearance Retention of Solid Colored Plastic Siding Products
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, configurations, and material characteristics.
- C. Shop Drawings: Submit detailed drawings showing location, profiles and product components, including but not limited to anchorage requirements, accessories and provisions for achieving desired finishes.
- D. Samples: Submit two color samples to Architect & Owner for selection.
- E. Certificate: Certify that products of this section meet or exceed specified requirements.
- F. Manufacturer's Qualification Statement.
- G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than 10 years of documented experience.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer.
- B. Store products in manufacturer's unopened packaging, under cover and elevated above grade.
- C. Store products on flat level surface to prevent warping.
- D. Protect products from damage due to related construction activities

**1.07 FIELD CONDITIONS**

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results.
  - 1. Do not install products under environmental conditions outside manufacturer's absolute limits.

- B. Allow at least 24 hours for materials to adapt to conditions at project site prior to installation.

## **1.08 WARRANTY**

- A. Upon completion of work, provide a written Manufacturer's Limited Lifetime Warranty for products installed under this section to Owner.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Gable Louvers:
  - 1. MidAmerica Components: [www.midamericacomponents.com](http://www.midamericacomponents.com)
  - 2. Fypon LLC: [www.fypon.com](http://www.fypon.com)
  - 3. Builders Edge/Tapco International Corp: [www.buildersedge.com](http://www.buildersedge.com)
  - 4. Or approved equal.

### **2.02 SIMULATED WOOD PRODUCTS**

- A. Gable Louvers:
  - 1. Molded polyurethane foam with factory-applied UV resistant primer suitable for field applied paint finish.
    - a. Style: As indicated on the Drawings.
    - b. Size: 24 inches.
    - c. Color: To be selected by Owner from manufacturer's standard line.
  - 2. Finished surfaces shall be free from cracks, pits, chips, voids, depressions, bumps, ridges waves, scratches, discoloration or other defacements.

### **2.03 MATERIALS**

- A. Cellular PVC, Extruded, expanded PVC; UV-resistant, heat-stabilized, and rigid material.
  - 1. Density: 31 pounds per cubic foot, minimum.
  - 2. Surface Burning Characteristics: Flame spread index of 75 maximum, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
  - 3. Deflection/Warping: ASTM D648, Not less than 130 deg F.
  - 4. Water Absorption: ASTM D570, less than 0.2 percent.
- B. Polypropylene, Molded high-density, UV stabilized.
  - 1. Density: 4 pounds per cubic foot, minimum.
  - 2. Surface Burning Characteristics: Flame spread index of 75 maximum, smoke developed index of 450 or less, when tested in accordance with ASTM E84.
  - 3. Compressive Strength: Minimum 300 pounds per sq. inch.

### **2.04 ACCESSORIES**

- A. Fasteners:
  - 1. Manufacturer's standard concealed fasteners, galvanized steel.
  - 2. Screws; Manufacturer's standard corrosion resistant steel.
- B. Adhesive:
  - 1. PVC plastic adhesive acceptable to manufacturer.
- C. Sealant (Urethane foam products):
  - 1. Urethane-based adhesive acceptable to manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verification of Conditions:
  - 1. Prior to the start of installation, inspect all preceding work to ensure that there are no conditions which will cause an unsatisfactory installation of work.
  - 2. Notify Architect in writing of any unacceptable conditions that would adversely affect installation or subsequent performance of these products.
  - 3. Do not install any work until unsatisfactory conditions are corrected.
  - 4. Commencement of work will imply acceptance of substrate.

### **3.02 PREPARATION**

- A. Protection of In-Place Conditions: Protect adjacent surfaces and work to prevent damage during installation.
- B. Surface Preparation:
  - 1. Clean surfaces thoroughly prior to installation.
  - 2. Prepare surface using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

### **3.04 TOLERANCES**

- A. Maximum Variation From True Position: 1/4 inch.
- B. Maximum Offset From True Alignment and plumb: 1/4 inch.

### **3.05 FIELD QUALITY CONTROL**

- A. After installation, check all work for flaws and defects.
- B. Repair all defective work.
  - 1. Remove and replace all damaged components that cannot be successfully repaired as determined by Architect.

### **3.06 CLEANING**

- A. Remove all protection materials.
- B. Clean all surfaces following manufacturer's recommendations prior to final project completion. Do not use harsh cleaning materials or methods that would damage finish.
- C. Dispose properly of all debris generated by this work, protection materials and cleaning materials.

### **3.07 PROTECTION**

- A. Protect items installed under this section from subsequent construction operations.

**END OF SECTION**





**SECTION 07 21 00**  
**THERMAL INSULATION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Board insulation at perimeter foundation wall and underside of floor slabs.
- B. Batt insulation in wall, floor/ceiling, and Unit Separation wall construction.
- C. Foam insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.
- D. Foam or equal sill sealer insulation beneath bottom plate of all new exterior walls in contact with concrete.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Supporting construction for batt insulation.
- B. Section 07 25 00 - Weather Barriers: Separate water-resistive air barrier.
- C. Section 07 21 26 - Blown Insulation: Blown-in, gravity-held fibrous insulation for installation in attic spaces.
- D. Section 07 92 00 - Joint Sealants.

**1.03 REFERENCE STANDARDS**

- A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2016.
- B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- C. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- E. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C; 2016.
- F. RESNET - Residential Home Energy Standards

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

**1.05 QUALITY ASSURANCE**

- A. Formaldehyde Content: Contractor shall ensure that all products installed are certified Formaldehyde-Free by the manufacturer.
  - 1. Evidence of Compliance: Acceptable types of evidence are:
    - a. Report of laboratory testing performed on proposed products.
    - b. Published product data showing compliance with requirements.

**1.06 FIELD CONDITIONS**

- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

**PART 2 PRODUCTS**

**2.01 APPLICATIONS**

- A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.
- B. Insulation at Perimeter of Foundation: Extruded polystyrene board.
- C. Insulation in Wood Framed Walls: Batt insulation with integral Type II vapor retarder (kraft paper faced batts).

- D. Insulation in Wood Framed Floor/Ceiling Structure: Batt insulation with kraft paper vapor retarder.

## **2.02 FOAM BOARD INSULATION MATERIALS**

- A. Extruded Polystyrene (XPS) Board Insulation: Comply with ASTM C578 with natural skin surfaces.
1. Type: ASTM C578, Type IV.
  2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
  3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
  4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per 1 inch thickness at 75 degrees F mean temperature.
  5. Board Width: 24 inches
  6. Board Edges: Tongue-and-groove.
  7. Products:
    - a. DuPont de Nemours, Inc; Styrofoam Brand Highload 40: [building.dupont.com](http://building.dupont.com).
    - b. Kingspan Insulation LLC; GreenGuard XPS Type IV, 25 psi: [www.kingspan.com](http://www.kingspan.com).
    - c. Owens Corning Corporation; FOAMULAR Extruded Polystyrene (XPS) Insulation: [www.ocbuildingspec.com](http://www.ocbuildingspec.com).

## **2.03 BATT INSULATION MATERIALS**

- A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with 1; friction fit.
1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
  2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
  3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
  4. Thermal Resistance at exterior walls: R-value of 20 minimum.
  5. Thickness at floor/ceilings: 3-1/2 inch for sound attenuation.
  6. Thickness at Unit Separation walls and floor/ceilings: 3-1/2 inch each side.
  7. Facing: Kraft paper.
    - a. Provide unfaced insulation at Unit Separation wall applications.
  8. Products:
    - a. CertainTeed Corporation: [www.certainteed.com](http://www.certainteed.com).
    - b. Johns Manville: [www.jm.com](http://www.jm.com).
    - c. Owens Corning Corporation: [www.ocbuildingspec.com](http://www.ocbuildingspec.com).

## **2.04 FOAM INSULATION**

- A. Single component polyurethane, low pressure foam sealant complying with ASTM E2178 for exterior wall penetrations.
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
  2. Smoke Developed Index: 50 or less, when tested in accordance with ASTM E84.
  3. R-value; 1 inch of material at 72 degrees F: 4.7, minimum.
  4. Minimum Density: 1.0 pounds per cubic foot.
  5. Manufacturers:
    - a. Dow Chemical Co.; Great Stuff: [www.greatstuff.dow.com](http://www.greatstuff.dow.com).
    - b. FOMO Products Inc.; Handi Foam: [www.fomo.com/handifoam](http://www.fomo.com/handifoam).
    - c. Touch 'n Seal Inc.; All Seasons: [www.touch-n-seal.com](http://www.touch-n-seal.com).
- B. Single component polyurethane, low pressure, low pressure build, foam sealant complying with ASTM E2178 for windows and doors.
1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
  2. Smoke Developed Index: 50 or less, when tested in accordance with ASTM E84.
  3. R-value; 1 inch of material at 72 degrees F: 4.7, minimum.
  4. Minimum Density: 1.10 pounds per cubic foot.
  5. Manufacturers:
    - a. Dow Chemical Co.; Great Stuff Window & Door: [www.greatstuff.dow.com](http://www.greatstuff.dow.com).
    - b. FOMO Products Inc.; Handi Foam Window & Door: [www.fomo.com/handifoam](http://www.fomo.com/handifoam).
    - c. Touch 'n Seal Inc.; No Warp: [www.touch-n-seal.com](http://www.touch-n-seal.com).

## **2.05 ACCESSORIES**

- A. Sheet Weather Barrier: See Section 07 25 00.

- B. Tape: Reinforced polyethylene film with acrylic pressure sensitive adhesive.
  - 1. Application: Sealing of interior circular penetrations, such as pipes or cables.
  - 2. Width: Are required for application.
- C. Insulation Fasteners: Lengths of unfinished, 13 gauge, 0.072 inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely supporting insulation in place.
- D. Staples: Steel wire; electroplated or galvanized; type and size to suit application.
- E. Adhesive: Type recommended by insulation manufacturer for application.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.
- C. Insulation shall be installed in accordance with North America Insulation Manufacturer's Association (NAIMA) RESNET Grade 1 requirements.

### **3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER**

- A. Comply with insulation manufacturer's printed instructions and recommendations for the installation of insulation boards. Provide adequate anchorage or support for each unit.
- B. Install boards horizontally on foundation perimeter.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

### **3.03 BOARD INSTALLATION UNDER CONCRETE SLABS**

- A. Place insulation at perimeter under slabs on grade after base for slab has been compacted.
  - 1. Width of perimeter insulation: 24 inches.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

### **3.04 BATT INSTALLATION**

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install in exterior wall and Dwelling Unit Separation wall spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Staple facing flanges in place at maximum 6 inches on center.
  - 1. Kraft paper-faced batt insulation in stud cavities of exterior walls.
  - 2. Tape seal butt ends, lapped flanges, and tears or cuts in facing.
- F. Retain unfaced insulation batts in place with spindle fasteners at 12 inches on center.
- G. Coordinate work of this section with construction of air barrier seal specified in Section 07 25 00.

### **3.05 FOAM INSULATION**

- A. Install insulation in accordance with manufacturer's instructions.
- B. Install expandable foam sealant to ensure continuity of building insulation envelope/thermal barrier.
- C. Extra care shall be taken with installation of expandable foam sealant to prevent damage to surrounding work and installed items.
  - 1. Do not overfill gaps.

### **3.06 PROTECTION**

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

**END OF SECTION**

**SECTION 07 21 26**  
**BLOWN INSULATION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Attic: Blown insulation pneumatically placed into joist spaces.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 07 21 00 - Thermal Insulation.

**1.03 REFERENCE STANDARDS**

- A. ASTM C739 - Standard Specification for Cellulosic Fiber Loose-Fill Thermal Insulation; 2011.
- B. ASTM C1015 - Standard Practice for Installation of Cellulosic and Mineral Fiber Loose-Fill Thermal Insulation; 2006 (Reapproved 2011).

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance criteria, and limitations.
- C. Certificates: Certify that products of this section meet or exceed specified requirements.

**1.05 QUALITY ASSURANCE**

- A. Formaldehyde Content: Contractor shall ensure that all products installed are certified Formaldehyde-Free by the manufacturer.
  - 1. Evidence of Compliance: Acceptable types of evidence are:
    - a. Report of laboratory testing performed on proposed products.
    - b. Published product data showing compliance with requirements.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Blown Insulation:
  - 1. Applegate Insulation: [www.applegateinsulation.com](http://www.applegateinsulation.com).
  - 2. Fiberlite Technologies, Inc: [www.fiberlitetech.com](http://www.fiberlitetech.com).
  - 3. GreenFiber: [www.greenfiber.com](http://www.greenfiber.com).
  - 4. Or approved equal.

**2.02 MATERIALS**

- A. Refer to Specification/Selection Design sheets.
- B. Applications: Provide blown insulation in attic as indicated on drawings.
- C. Loose Fill Insulation: ASTM C739, cellulose fiber type, bulk for pneumatic placement.
  - 1. Thermal Transmittance (U-value): 0.27 BTU/hr sq ft deg F, maximum.
  - 2. Total Thermal Resistance at Attic:
    - a. Dwelling Unit Buildings: R-value of 39 (deg F hr sq ft)/Btu, minimum.

**2.03 ACCESSORIES**

- A. Roof Ventilation Baffles: Prefabricated ventilation channels for placement under roof sheathing with baffles to prevent wind-washing.
  - 1. Material: Polyvinyl chloride (PVC).
  - 2. Roof Joist/Truss Spacing: 24 inch on center, nominal.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that substrate and adjacent materials are dry and ready to receive insulation.
- B. Verify that light fixtures have thermal cut-out device to restrict over-heating in soffit or ceiling spaces.
- C. Verify spaces are unobstructed to allow for proper placement of insulation.

### **3.02 INSTALLATION**

- A. Install insulation and ventilation baffle in accordance with ASTM C1015 and manufacturer's instructions.
- B. Place insulation pneumatically to completely fill rafter spaces.
- C. Place insulation against baffles, and do not impede natural attic ventilation to soffit.
  - 1. Insulation to cover top plates at exterior wall to a minimum installed depth of 6 inches.
- D. Completely fill intended spaces leaving no gaps or voids.

### **3.03 FIELD QUALITY CONTROL**

- A. Insulation Certification - Contractor shall post in the attic of each building (near the attic access) Certification of Insulation Type, "R" value, conformance to applicable Federal Specifications, plus the date of installation and the name of the installer.
- B. Installer shall install measuring "tape" for each 300 SF of attic area, stapled to side of truss webbing.

### **3.04 CLEANING**

- A. Remove loose insulation residue.

**END OF SECTION**

**SECTION 07 25 00**  
**WEATHER BARRIERS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Water-resistive, vapor-permeable air and water barriers.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Water-resistive air barrier under exterior cladding.

**1.03 DEFINITIONS**

- A. Weather Barriers: Assemblies that form either water-resistive barriers, air barriers, or vapor retarders.
- B. Water-Resistive Barrier: A material behind an exterior wall covering that is intended to resist liquid water that has penetrated behind the exterior covering from further intruding into the exterior wall assembly.

**1.04 REFERENCE STANDARDS**

- A. AATCC Test Method 127 - Water Resistance: Hydrostatic Pressure Test; 2014.
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2015a.
- C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- D. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- E. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials; 2013.
- F. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2012.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on material characteristics.
- C. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

**1.06 FIELD CONDITIONS**

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

**PART 2 PRODUCTS**

**2.01 WATER-RESISTIVE AIR BARRIER MATERIALS**

- A. Water-Resistive Air Barrier: For use in Construction Types I, II, III, and IV on buildings greater than 40 feet in height.
  - 1. Comply with NFPA 285 wall assembly requirements in accordance with local building code and authorities having jurisdiction (AHJ).
- B. Water-Resistive and Air Barrier, Multilayers: Outer layers of nonwoven, spunbonded polypropylene with vapor permeable, watertight polymeric middle layer.
  - 1. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
  - 2. Water Vapor Permeance: 54 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F.
  - 3. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 3 months of weather exposure.
  - 4. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
  - 5. Water Resistance: Withstand hydrostatic head of 21 inches, minimum, for at least five hours; pass test method in accordance with AATCC Test Method 127.
  - 6. Seam and Perimeter Tape: As recommended by sheet manufacturer.
  - 7. Products:

- a. DuPont Building Innovations; Tyvek Home Wrap with FlexWrap NF, StraightFlash, StraightFlash VF, Tyvek Wrap Caps, and Tyvek Tape: [www.dupont.com](http://www.dupont.com).
- b. Kingspan Insulation LLC; GreenGuard HPW Building Wrap with GreenGuard Butyl Flashing and GreenGuard SuperStretch Flashing: [www.trustgreenguard.com](http://www.trustgreenguard.com).
- c. National Shelter Products, Inc; DRYLine HP with Dryline Sheathing Tape, ATX Flashing, and ATX Flex Flashing: [www.drylinewrap.com](http://www.drylinewrap.com).

## **2.02 ACCESSORIES**

- A. Sealants, Tapes, and Accessories Used for Sealing Water-Resistive Barrier and Adjacent Substrates: As indicated or complying with water-resistive barrier manufacturer's installation instructions.
- B. Flexible Flashing: Self-adhesive sheet flashing complying with ASTM D1970/D1970M, except slip resistance requirement is waived if not installed on a roof.
  - 1. Width: 4 inches.
- C. Thinners and Cleaners: As recommended by water-resistive barrier manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that surfaces and conditions comply with requirements of this section.

### **3.02 PREPARATION**

- A. Remove projections, protruding fasteners, and loose or foreign matter that might interfere with proper installation.
- B. Clean and prime substrate surfaces to receive adhesives and sealants in accordance with manufacturer's instructions.

### **3.03 INSTALLATION**

- A. Install materials in accordance with manufacturer's installation instructions.
- B. Water-Resistive Air Barriers: Install continuous water-resistive barrier over surfaces indicated, with sheets lapped to shed water and with seams and joints sealed to adjacent surfaces..
- C. Mechanically Fastened Exterior Sheets:
  - 1. Install sheets shingle-fashion to shed water, with seams aligned horizontal.
  - 2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
  - 3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.
  - 4. Attach to framed construction with fasteners extending through sheathing into framing, and space fasteners at 12 to 18 inches on center along each framing member supporting sheathing.
  - 5. For applications indicated to be airtight, seal seams, laps, penetrations, tears, and cuts with self-adhesive tape; use only large-headed, gasketed fasteners as recommended by manufacturer.
  - 6. Where stud framing rests on concrete or masonry substrate, extend lower edge of barrier sheets at least 4 inches below bottom of framing and seal to substrate with sealant or approved mounting tape.
  - 7. Install water-resistive barrier over jamb flashings.
  - 8. Install head flashings under water-resistive barrier.
  - 9. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.
- D. Openings and Penetrations in Exterior Water-Resistive Air Barriers:
  - 1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
  - 2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
  - 3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.



4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

#### **3.04 PROTECTION**

- A. Do not leave materials exposed to weather longer than recommended by manufacturer.
- B. Protect installed weather barrier from any and all damage prior to installation of exterior cladding or veneers.
  1. Any and all rips, tears and/or punctures shall be repaired in accordance with manufacturer's written repair instructions.
  2. If damaged building wrap is not repairable, then follow manufacturer's written instructions for partial removal and "patching" of building wrap to maintain integrity of building wrap membrane.

**END OF SECTION**



**SECTION 07 31 13**  
**ASPHALT SHINGLES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Asphalt shingle roofing.
- B. Flexible sheet membranes for underlayment and valley protection.
- C. Metal flashings and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Roof sheathing.
- B. Section 07 62 00 - Sheet Metal Flashing and Trim.
- C. Section 07 71 23 - Manufactured Gutters and Downspouts.

**1.03 REFERENCE STANDARDS**

- A. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2009.
- B. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2015a.
- C. ASTM D3462/D3462M - Standard Specification for Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules; 2010a.
- D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).
- E. ASTM D7158/D7158M - Standard Test Method for Wind Resistance of Asphalt Shingles (Uplift Force/Uplift Resistance Method); 2017.
- F. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials; 2016.
- G. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings; 2011.
- H. ASTM F1667/F1667M - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples; 2021a.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data indicating material characteristics and performance criteria.
- C. Manufacturer's Installation Instructions: Indicate installation criteria and procedures.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

**1.05 QUALITY ASSURANCE**

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store materials with labels intact in manufacturer's unopened packaging until ready for installation.
- B. Store materials under dry and waterproof cover, well ventilated, and elevated above grade on a flat surface.
- C. When storing roofing materials on roofing system ensure that no damage occurs to supporting members and other materials.

**1.07 FIELD CONDITIONS**

- A. Do not install shingles, underlayment when ambient air temperatures are below 45 degrees F.

**1.08 WARRANTY**

- A. Provide manufacturer's standard, transferable warranty:
  - 1. Materials: Warrant shingles for 30 years against defect or deterioration that results in leaks under normal weather and use conditions.

2. Installation: Warrant total roof system, including underlayments, flashings, and other roof components for 2 years against water penetration.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Asphalt Shingles:
  1. CertainTeed; Landmark Series: [www.certainteed.com](http://www.certainteed.com).
  2. GAF; Timberline American Harvest: [www.gaf.com](http://www.gaf.com).
  3. Owens Corning Corp; Oakridge: [www.owenscorning.com](http://www.owenscorning.com).
  4. Or approved equal.

### **2.02 ASPHALT SHINGLES**

- A. Asphalt Shingles: Asphalt-coated glass felt, mineral granule surfaced, complying with ASTM D3462/D3462M.
  1. Fire Resistance: Class A, complying with ASTM E108.
  2. Wind Resistance (Uplift): Class G, when tested in accordance with ASTM D7158/D7158M.
  3. Warranted Wind Speed: Not greater than 150 mph.
  4. Fungal/Algae Resistant.
  5. Self-sealing type.
  6. Style: Laminated overlay.

### **2.03 SHEET MATERIALS**

- A. Eave and Valley Protection Membrane: Self-adhering polymer-modified asphalt sheet complying with ASTM D1970/D1970M; 40 mil total thickness; with strippable treated release paper and polyethylene sheet top surface.
- B. Underlayment: Synthetic non-asphaltic sheet, intended by manufacturer for mechanically fastened roofing underlayment without sealed seams and meeting requirements of ASTM D226/D226M.
  1. Type: Woven polypropylene with anti-slip polyolefin coating on both sides.
  2. Self Sealability: Passing nail sealability test specified in ASTM D1970/D1970M.
  3. Ultraviolet (UV) Resistance and Weatherability: Approved in writing by manufacturer for exposure to weather for minimum of two months.
  4. Low Temperature Flexibility: Passing test specified in ASTM D1970/D1970M.
  5. Water Vapor Permeance: Vapor retarder; maximum of 1 perm, when tested in accordance with ASTM E96/E96M Procedure A, desiccant method.
  6. Fasteners: As recommended by manufacturer or building code qualification report or approval.
  7. Products:
    - a. Beacon Roofing Supply Inc; Tri-Built Synthetic Underlayment: [www.becn.com](http://www.becn.com).
    - b. System Components Corporation, Inc; ProTex: [www.systemcomponents.net](http://www.systemcomponents.net).
    - c. Or approved equal.
- C. Underlayment: Asphalt-saturated organic roofing felt, unperforated, complying with ASTM D226/D226M, Type I, No. 15.

### **2.04 METAL FLASHING**

- A. Metal Flashings: Provide sheet metal eave edge, gable board, fascia board, and other flashing as indicated.
  1. Form flashings to protect roofing materials from physical damage and shed water.
  2. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.
  3. Hem exposed edges of flashings minimum 1/4 inch on underside.
- B. Fascia and Gable Flashing: Pre-formed or site-fabricated sheet metal fascia and gable board cladding to cover entire exposed faces with no horizontal seams. Overlap vertical seams 2 inches.
- C. Aluminum Flashing: Prefinished aluminum, 26 gauge, 0.017 inch minimum thickness; stucco embossed, PVC coating, color as selected by Owner.

## **2.05 ACCESSORIES**

- A. Roofing Nails: Standard round wire shingle type, galvanized steel, minimum 3/8-inch head diameter, 12-gauge, 0.109-inch nail shank diameter, 1-1/2 inches long and complying with ASTM F1667/F1667M.
- B. Coil Nails: Standard round wire shingle type, barbed shank, of electro-galvanized steel, 11 - 12 wire gage, 0.125 - 0.109 inch shank diameter, 3/8 inch head diameter, of sufficient length to penetrate through roof sheathing or 3/4 inch into roof sheathing or decking.
- C. Asphalt Roof Cement: ASTM D4586/D4586M, asbestos-free.
- D. Ridge Vents: Plastic, corrugated with vent openings that do not permit direct water or weather entry; flanged to receive shingles; Vent-Sure manufactured by Owens Corning.
  - 1. Free Vent Area (net): 18 square inches per linear foot.
  - 2. Size: 1 inch high x 11-7/16 inch wide.
- E. Roof Vents: Aluminum construction with nailing flange and insect screen; equal to Model RVA 50 manufactured by Air Vent Inc.
  - 1. Free Vent Area (net): 50 square inches.
  - 2. Size of Roof Opening: 8 inch round.
  - 3. Color: Color as selected by Owner/Architect.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions prior to starting this work.
- B. Verify that roof deck is of sufficient thickness to accept fasteners.
- C. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
- D. Verify roof openings are correctly framed.
- E. Verify deck surfaces are dry, free of ridges, warps, or voids.

### **3.02 PREPARATION**

- A. Remove existing roofing, underlayment, flashings, nails, and all accessories to existing roof deck.
- B. Seal roof deck joints wider than 1/16 inch as recommended by shingle manufacturer.
- C. At areas where eave protection membrane is to be adhered to substrate, fill knot holes and surface cracks with latex filler.
- D. Broom clean deck surfaces before installing underlayment or eave protection.
- E. Install eave edge and gable edge flashings tight with fascia boards. Weather lap joints 2 inches and seal with plastic cement. Secure flange with nails spaced 8 inches on center.

### **3.03 INSTALLATION**

- A. Underlayment:
  - 1. Roof Slopes Up to 4:12: Install two layers of underlayment over area not protected by eave protection, with ends and edges weather lapped minimum 6 inches; stagger end laps of each consecutive layer and nail in place through metal disks at 12 inches on center.
  - 2. Roof Slopes Greater Than 4:12: Install underlayment perpendicular to slope of roof, with ends and edges weather lapped minimum 4 inches; stagger end laps of each consecutive layer, nail in place through metal disks at 12 inches, and weather lap minimum 4 inches over eave protection.
  - 3. Weather lap and seal watertight with plastic cement any items projecting through or mounted on roof.
- B. Valley Protection Membrane:
  - 1. Install one ply of flexible flashing, minimum 48 inches wide, centered over valleys.
  - 2. Install flexible flashing in accordance with manufacturer's instructions.
  - 3. Weather lap joints minimum 4 inches.
  - 4. Nail in place minimum 18 inches on center, 1 inch from edges.
- C. Metal Flashing:
  - 1. Install flashings in accordance with manufacturer's instructions.

2. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
  3. Secure in place with nails at 8 inches on center, and conceal fastenings.
  4. At sidewall roof lines (where a sloped roof abuts a vertical wall surface) "kickout flashing" shall be installed in accordance with the siding manufacturer written Installation Requirements
  5. Items Projecting Through or Mounted on Roofing: Flash and seal weather tight with plastic cement.
- D. Shingles:
1. Install shingles in accordance with manufacturer's instructions.
    - a. Fasten individual shingles using two nails per shingle, or as required by manufacturer and local building code, whichever is greater.
    - b. Fasten strip shingles using four nails per strip, or as required by manufacturer and local building code, whichever is greater.
  2. Place shingles in straight coursing pattern with 5-inch weather exposure to produce double thickness over full roof area, and provide double course of shingles at eaves.
  3. Project first course of shingles 1/2 inch beyond fascia boards.
  4. Extend shingles 1/2 inch beyond face of gable edge fascia boards.
  5. Extend shingles on one slope across valley and fasten; trim shingles from other slope 2 inches from valley center line to achieve closed cut valley, concealing valley protection.
  6. Cap hips and ridges with pre-formed ridge and hip shingles, maintaining 5-inch weather exposure, and place to avoid exposed nails.
  7. Coordinate installation of roof mounted components or work projecting through roof with weathertight placement of counterflashings.
  8. Complete installation to provide weathertight service.
- E. Vents:
1. Ridge vent openings and ridge vent material shall not be located less than 24 inches from end of ridge.
  2. Roof vents shall be located on the rear-facing slope of roof, within 24 inches of the ridge. Installation to be evenly spaced across the width of attic areas contained between rated partitions.

### **3.04 CLEANING**

- A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.
- B. Clean exposed work upon completion of installation; remove grease and oil films, excess joint sealer, handling marks, and debris from installation, leaving work clean and unmarked, free from dents, creases, waves, scratch marks, or other damage to finish.

### **END OF SECTION**

**SECTION 07 46 46**  
**FIBER-CEMENT SIDING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fiber-cement siding.
- B. Aluminum Ceilings, Soffits and Trim.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Siding substrate, openings, and penetrations.
- B. Section 07 25 00 - Weather Barriers: Water-resistive air barrier under siding.
- C. Section 07 62 00 - Sheet Metal Flashing and Trim: Product requirements for metal flashings and trim associated with fiber cement siding for placement by this section.
- D. Section 07 92 00 - Joint Sealants: Sealing joints between siding and adjacent construction and fixtures.
- E. Section 09 91 13 - Exterior Painting: Field painting.

**1.03 REFERENCE STANDARDS**

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2013.
- B. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2014.
- C. ASTM C1186 - Standard Specification for Flat Fiber Cement Sheets; 2008 (Reapproved 2012).

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
  - 1. Manufacturer's requirements for related materials to be installed by others.
  - 2. Preparation instructions and recommendations.
  - 3. Storage and handling requirements and recommendations.
  - 4. Installation methods, including nail patterns.
- C. Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver and store materials in manufacturer's unopened packaging, with labels intact, until ready for installation.
- B. Store materials under dry and waterproof cover, well ventilated, and elevated above grade on a flat surface.

**1.06 WARRANTY**

- A. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.
- B. Manufacturer Warranty: Provide manufacturer warranty for years as indicated under Fiber-Cement Siding article sub-headings for "Warranty". Complete forms in Owner's name and register with manufacturer.

**PART 2 PRODUCTS**

**2.01 FIBER-CEMENT SIDING**

- A. Lap Siding: Individual horizontal boards made of cement and cellulose fiber formed under high pressure with integral surface texture, in compliance with ASTM C1186, Type A, Grade II; with machined edges, for nail attachment.
  - 1. Style: Standard lap style.
  - 2. Texture: Simulated cedar grain.
  - 3. Length: 12 feet, nominal.
  - 4. Width (Height): 9-1/2 inches.

5. Thickness: 7/16 inch, nominal.
6. Finish: Factory applied primer.
7. Warranty: 50 year limited; transferable.
8. Products:
  - a. Allura, a division of Plycem USA, Inc: [www.allurausa.com](http://www.allurausa.com).
  - b. James Hardie Building Products, Inc: [www.jameshardie.com](http://www.jameshardie.com).
  - c. Nichiha USA, Inc: [www.nichiha.com](http://www.nichiha.com).
  - d. Or approved equal.
- B. Aluminum Soffit: Prefinished Aluminum complying with ASTM B209 ; 2-coat fluoropolymer polyester coating, AAMA 2604, thermally cured.
  1. Profile: 16 inch Quad-4, 3/8 inch depth; Fully-vented.
  2. Thickness: 26 gauge, (0.016 inch).
  3. Net Free Vent Area: 9 sq. in. per linear foot, minimum.
  4. Finish: Smooth.
  5. Color: As selected from manufacturer's full range of available colors.
  6. Accessories: 'J'-channel; starter strip; associated trim.
  7. Manufacturers:
    - a. Napco (a PlyGem Inc. company): [www.napcoproducts.com](http://www.napcoproducts.com).
    - b. Alside Inc.: [www.alside.com](http://www.alside.com).
    - c. Fabral Inc.: [www.fabral.com](http://www.fabral.com).
    - d. Or approved equal.

## **2.02 ACCESSORIES**

- A. Trim: Same material and texture as siding.
- B. Fasteners: Galvanized or corrosion resistant; length as required to penetrate, 1-1/4 inches, minimum.
- C. Flashing: Aluminum, 26 gage, 0.0179 inch minimum base metal thickness.
- D. Sealant: Elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.
- E. Finish Paint: Latex house paint acceptable to siding manufacturer; primer recommended by paint manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine substrate, clean and repair as required to eliminate conditions that would be detrimental to proper installation.
- B. Verify that weather air barrier has been installed over substrate completely and correctly.
- C. Do not begin until unacceptable conditions have been corrected.
- D. If substrate preparation is responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A. Protect surrounding areas and adjacent surfaces during execution of this work.
- B. Install Sheet Metal Flashing:
  1. Above door and window trim and casings.
  2. Above masonry or manufactured stone veneer termination.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions and recommendations.
  1. Read warranty and comply with terms necessary to maintain warranty coverage.
  2. Use trim details as indicated on drawings.
  3. Touch up field cut edges before installing.
  4. Pre-drill nail holes if necessary to prevent breakage.
- B. Over Wood and Wood-Composite Sheathing: Fasten siding through sheathing into studs.
- C. Joints in Horizontal Siding: Avoid joints in lap siding except at corners; where joints are inevitable stagger joints between successive courses.



- D. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.
- E. Attach soffits securely to framing, not sheathing, with horizontal components true to level, providing a weather resistant installation.
  - 1. Provide trim and associated hardware as required for surface-mounted and/or recessed installation of exterior lights at soffit panels.
  - 2. Provide vent area shown on drawings.
- F. After installation, seal joints except lap joints of lap siding; seal around penetrations, and paint exposed cut edges.
- G. Finish Painting: See Section 09 91 13.

#### **3.04 PROTECTION**

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

**END OF SECTION**



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

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fabricated sheet metal items, including flashings, counterflashings, and other items as required.
- B. Sealants for joints within sheet metal fabrications.

**1.02 RELATED REQUIREMENTS**

- A. Section 04 20 00 - Unit Masonry: Metal flashings at masonry.
- B. Section 07 31 13 - Asphalt Shingles: Installation of flashings specified in this section.
- C. Section 07 46 33 - Vinyl Siding: Flashings associated with siding installation.
- D. Section 07 92 00 - Joint Sealants: Sealing non-lap joints between sheet metal fabrications and adjacent construction.

**1.03 REFERENCE STANDARDS**

- A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2015.
- B. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- C. ASTM D2178/D2178M - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing; 2015a.
- D. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement, Asbestos-Free; 2007 (Reapproved 2012).
- E. CDA A4050 - Copper in Architecture - Handbook; current edition.
- F. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

**1.04 QUALITY ASSURANCE**

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

**1.05 DELIVERY, STORAGE, AND HANDLING**

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

**PART 2 PRODUCTS**

**2.01 SHEET MATERIALS**

- A. Pre-Finished Aluminum: ASTM B209M, 3005 alloy, H12 or H14 temper; 26 gauge, 0.017 inch thick; plain finish shop pre-coated with silicone modified polyester coating.
  - 1. Silicone Modified Polyester Coating: Pigmented organic powder coating, AAMA 2603; baked enamel finish system.

**2.02 FABRICATION**

- A. General: Provide prefinished aluminum sheet metal flashing at changes in adjacent siding materials and other flashing indicated, color as selected by Owner/Architect.
- B. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- C. Form pieces in longest possible lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
- F. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.
- G. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

### **2.03 ACCESSORIES**

- A. Fasteners: Galvanized steel, with soft neoprene washers.
- B. Underlayment: ASTM D2178/D2178M, glass fiber roofing felt.
- C. Primer: Zinc chromate type.
- D. Concealed Sealants: Non-curing butyl sealant.
- E. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
- F. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that substrates are ready to receive work.
- B. Verify that water-resistive barrier has been installed over substrate completely and correctly.
- C. Do not begin until unacceptable conditions have been corrected.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

- A. Install starter and edge strips, and cleats before starting installation.
- B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

### **3.03 INSTALLATION**

- A. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted..
- B. Apply plastic cement compound between metal flashings and felt flashings.
- C. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- D. Seal metal joints watertight.

**END OF SECTION**

**SECTION 07 71 23**  
**MANUFACTURED GUTTERS AND DOWNSPOUTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Pre-finished aluminum gutters and downspouts.
- B. Precast concrete splash blocks.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 31 13 - Asphalt Shingles
- B. Section 07 62 00 - Sheet Metal Flashing and Trim.

**1.03 REFERENCE STANDARDS**

- A. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2015.
- B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on prefabricated components.
- C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
- D. Samples: Submit two samples, 6 inch long illustrating component design, finish, color, and configuration.

**1.05 DELIVERY, STORAGE, AND HANDLING**

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

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Pre-Finished Aluminum Sheet: ASTM B209/B209M, 3005 alloy, H14 temper; 0.032 inch thick.
  - 1. Finish: Plain, shop pre-coated with acrylic coating.
  - 2. Color: As selected from manufacturer's standard colors.

**2.02 COMPONENTS**

- A. Gutters: 6 inch K-style profile.
- B. Downspouts: 3 inch by 4 inch Rectangular profile, minimum.
- C. Anchors and Supports: Profiled to suit gutters and downspouts.
  - 1. Gutter Supports: Straps.
  - 2. Downspout Supports: Straps.
- D. Fasteners: Same material and finish as gutters and downspouts, with soft neoprene washers.

**2.03 FABRICATION**

- A. Form gutters and downspouts of profiles and size indicated.
- B. Fabricate with required connection pieces.
- C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- D. Hem exposed edges of metal.
- E. Fabricate gutter and downspout accessories; seal watertight.

**2.04 FINISHES**

- A. Acrylic polyester coating: Baked enamel system complying with AAMA 2603.

## **2.05 ACCESSORIES**

- A. Splash Blocks: Precast concrete type, size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
  - 1. Size: 3 inch by 12 inch by 30 inch
  - 2. Manufacturer: Equal to Modern Precast Inc: [www.modernprecast.com](http://www.modernprecast.com).
  - 3. Model No: 30" Splash Block.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that surfaces are ready to receive work.

### **3.02 PREPARATION**

- A. Paint concealed sheet metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

### **3.03 INSTALLATION**

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Slope gutters 1/8 inch per foot, 2 percent minimum.
- C. Set splash blocks under downspouts.

**END OF SECTION**

## **SECTION 07 84 00**

### **FIRESTOPPING**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

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

##### **1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard fireproofing.

##### **1.03 REFERENCE STANDARDS**

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a.
- B. ITS (DIR) - Directory of Listed Products; current edition.
- C. FM (AG) - FM Approval Guide; current edition.
- D. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- E. UL (FRD) - Fire Resistance Directory; current edition.

##### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- C. Sustainable Design Submittal: Submit VOC content documentation for nonpreformed materials.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Certificate from authority having jurisdiction indicating approval of materials used.
- F. Manufacturer's qualification statement.
- G. Installer's qualification statement.

##### **1.05 QUALITY ASSURANCE**

- A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
  - 1. Listing in UL (FRD) will be considered as constituting an acceptable test report.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and:
  - 1. Trained by manufacturer.

##### **1.06 FIELD CONDITIONS**

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

#### **PART 2 PRODUCTS**

##### **2.01 MANUFACTURERS**

- A. Firestopping Manufacturers:
  - 1. Hilti, Inc; FS-ONE, FS-ONE MAX: [www.hilti.com](http://www.hilti.com).
  - 2. RectorSeal Corporation; FlameSafe: [www.flamesafe.rectorseal.com](http://www.flamesafe.rectorseal.com)
  - 3. Specified Technologies Inc; SpecSeal: [www.stifirestop.com](http://www.stifirestop.com).
  - 4. Or approved equal..

##### **2.02 MATERIALS**

- A. Firestopping: Any material meeting requirements.

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

### **2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS**

- A. The following listed UL Fire Rated Penetration Systems are provided for the Contractor's use in selecting the appropriate system for field conditions and F Rating of penetrated assemblies.
  - 1. Contractor is not limited to using only these fire rated systems.
  - 2. Contractor shall provide proper documentation upon request of the Owner/Architect or Authorities having jurisdiction over project.
- B. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
  - 1. Temperature Rise: For horizontal rated assemblies (Floor/Ceiling), provide systems that have been tested to show T Rating equal to required F Rating.
    - a. Systems contained and located within the cavity of a wall, T Rating is not required.
  - 2. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- C. Additional related information is provided on MEP Drawings.

### **2.04 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS**

- A. Penetrations By:
  - 1. Uninsulated Metallic Pipe, Conduit, and Tubing:
    - a. 2 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
    - b. 2 Hour Construction: UL System W-L-1222; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
    - c. 2 Hour Construction: UL System W-L-1312; RectorSeal FlameSafe Silicone NS.
    - d. 1 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
    - e. 1 Hour Construction: UL System W-L-1222; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
    - f. 1 Hour Construction: UL System W-L-1312; RectorSeal FlameSafe Silicone NS.
  - 2. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
    - a. 2 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
    - b. 2 Hour Construction: UL System W-L-1038; RectorSeal FS 1900 Sealant.
    - c. 2 Hour Construction: UL System W-L-2048; STI SpecSeal BLU or RED.
    - d. 1 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop.
    - e. 1 Hour Construction: UL System W-L-1038; RectorSeal FSP 1100 Putty.
    - f. 1 Hour Construction: UL System W-L-2048; STI SpecSeal BLU or RED.
  - 3. Electrical Cables Not In Conduit:
    - a. 2 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
    - b. 2 Hour Construction: UL System W-L-3169; Specified Technologies Inc. LCI Intumescent Firestop Sealant.
    - c. 1 Hour Construction: UL System W-L-3065; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CD 601S Elastomeric Firestop Sealant, or CP 618 Firestop Putty Stick.
    - d. 1 Hour Construction: UL System W-L-3076; Specified Technologies Inc. SSS Intumescent Firestop Sealant.
    - e. 1 Hour Construction: UL System W-L-3303; Specified Technologies Inc. Ready Split Sleeve.
    - f. 1 Hour Construction: UL System W-L-3334; Hilti CP 653 Speed Sleeve.
    - g. 1 Hour Construction: UL System W-L-3376; Specified Technologies Inc. Ready-Sleeve.

### **2.05 FIRESTOPPING PENETRATIONS THROUGH FLOOR-CEILING ASSEMBLIES**

- A. Penetrations by:
  - 1. Uninsulated Metallic Pipe, Conduit, and Tubing:



- a. 2 Hour Construction: UL System F-C-1020; RectorSeal FlameSafe FS 1900, Metacaulk 1000.
- b. 1 Hour Construction: UL System F-C-1002; 3M CP 25WB+.
- c. 1 Hour Construction: UL System F-C-1053; STI SpecSeal WF300 Caulk.
- d. 1 Hour Construction: UL System F-C-1150; A/D Fire Protection A/D FireBarrier Intumescent Sealant.
- 2. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
  - a. 2 Hour Construction: UL System F-C-2041; RectorSeal FS 1900 Sealant, Metacaulk MC 150+, FSD Devise.
  - b. 2 Hour Construction: UL System F-C-2020; STI SpecSeal SSS Sealant, LCI Sealant, Firestop collar, LCC Firestop collar.
  - c. 1 Hour Construction: UL System F-C-2002; 3M FS-195+, CP 25WB.
  - d. 1 Hour Construction: UL System F-C-2115; 3M FS-195+, Ultra GS.
  - e. 1 Hour Construction: UL System F-C-2041; RectorSeal FS 1900 Sealant, Metacaulk MC 150+, FSD Devise.
  - f. 1 Hour Construction: UL System F-C-2091; RectorSeal FS 1900 Sealant, Metacaulk MC 1000.
  - g. 1 Hour Construction: UL System F-C-2020; STI SpecSeal SSS Sealant, LCI Sealant, Firestop collar, LCC Firestop collar.
  - h. 1 Hour Construction: UL System F-C-2158; STI SpecSeal RED Wrap Strip, RED2, BLU Wrap Strip, BLU2 Wrap Strip, SpecSeal Firestop collar, LCC collar.

## **2.06 FIRESTOPPING SYSTEMS**

- A. Firestopping: Any material meeting requirements.
  - 1. Fire Ratings: Use any system that is listed by UL (FRD) and tested in accordance with ASTM E814 with F Rating equal to fire rating of penetrated assembly and T Rating Equal to F Rating and in compliance with other specified requirements.
    - a. Systems penetrating a horizontal fire rated assembly, where contained and located within the cavity of a wall, do not require a T Rating.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

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

### **3.02 PREPARATION**

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

### **3.03 INSTALLATION**

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
- C. Install labeling required by code.

### **3.04 FIELD QUALITY CONTROL**

- A. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

### **3.05 CLEANING**

- A. Clean adjacent surfaces of firestopping materials.

### **3.06 PROTECTION**

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

**END OF SECTION**



**SECTION 07 92 00**  
**JOINT SEALANTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Non-sag gunnable joint sealants.
- B. Joint backings and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.
- B. Section 03 30 00 - Cast-in-Place Concrete: Sealants required for through-penetrations.
- C. Section 06 10 00 - Rough Carpentry: Sealing joints between built-up framing members.
- D. Section 08 11 13 - Hollow Metal Doors and Frames.
- E. Section 08 53 13 - Vinyl Windows.
- F. Section 09 21 16 - Gypsum Board Assemblies: Sealants required for through-penetrations.

**1.03 REFERENCE STANDARDS**

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015.
- B. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- E. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants; 2002 (Reapproved 2013).
- F. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 4. Substrates the product should not be used on.
  - 5. Substrates for which use of primer is required.
  - 6. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
  - 7. Sample product warranty.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Sustainable Design Documentation: For sealants and primers, submit VOC content and emissions documentation; see Section 01 61 16.
- E. Executed warranty.

**1.05 WARRANTY**

- A. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Non-Sag Sealants: Permits application in vertical surfaces joints without sagging or slumping.

1. BASF Construction Chemicals-Building Systems: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
2. Dow: [www.dow.com](http://www.dow.com).
3. GE Silicones Inc.: [www.ge.com](http://www.ge.com).
4. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
5. Sika Corporation: [www.usa-sika.com](http://www.usa-sika.com).
6. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com](http://www.tremcosealants.com).
7. Or approved equal.

## 2.02 JOINT SEALANT APPLICATIONS

### A. Scope:

1. Exterior Joints: Seal open joints, whether or not the joint is indicated on drawings, unless specifically indicated not to be sealed. Exterior joints to be sealed include, but are not limited to:
  - a. Wall expansion and control joints.
  - b. Joints between door, window, and other frames and adjacent construction.
  - c. Joints between different exposed materials including, but not limited to:
    - 1) Flashing and adjacent building materials.
    - 2) Vertical siding/masonry joints.
    - 3) Sleeves or pipes penetrating exterior walls.
    - 4) Sleeves or pipes penetrating masonry or concrete walls.
  - d. Openings below ledge angles in masonry.
  - e. Lap joints in and penetrations through weather barriers.
  - f. Exterior Siding:
  - g. Other joints indicated below.
2. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
  - a. Joints between door, window, and other frames and adjacent construction.
  - b. Gypsum board to wood or masonry.
  - c. Metal to gypsum board, wood, or masonry.
  - d. Perimeter of plumbing fixtures, shower surrounds, drains, or piping.
  - e. Perimeter of counter tops and vanity tops
  - f. Other joints indicated below.
3. Do not seal the following types of joints:
  - a. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
  - b. Joints where installation of sealant is specified in another section.
4. Additional Locations: In addition to locations listed or shown on the Drawings to receive continuous sealant materials, a continuous bead of sealant, appropriate to construction materials and locations, shall be provided/installed at:
  - a. Horizontal joint between bottom of wood sill plate and top of foundation wall or slab on grade.
  - b. Horizontal joint(s) between double/triple top plates.
  - c. Vertical joint(s) between double/triple studs in general framing and at door/window rough openings.
  - d. Stud cavities blocked at change in ceiling heights.
  - e. Penetrations through top and bottom plates.
  - f. Seam(s) in band joists.
  - g. Gaps in exterior wall sheathing.
  - h. Penetrations in exterior wall sheathing.
  - i. Penetrations in gypsum board of insulated exterior walls.

### B. Exterior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.

1. Masonry Expansion Joints: Two-part polyurethane.
2. Metal to Masonry: Two-part polyurethane.
3. Lap Joints in Sheet Metal Fabrications: Two-part polyurethane, non-curing.
4. General Flashing and Flashing to Brick: One-part polyurethane.
5. Sleeves in Walls: One-part polyurethane.

### C. Interior Joints: Use non-sag acrylic sealant, unless otherwise indicated.

1. Gypsum Board or Plaster to Masonry or Wood: Acrylic.

2. Metal to Gypsum Board, Plaster or Masonry: Acrylic.
3. Metal to Brick: Two-part polyurethane.
4. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.

### **2.03 JOINT SEALANTS - GENERAL**

- A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

### **2.04 NONSAG JOINT SEALANTS**

- A. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
  1. Color: White.
  2. Products:
    - a. Dow Chemical Company; 732 Silicone: [www.dow.com](http://www.dow.com).
    - b. GE Silicones, Inc; Silicone II: [www.ge.com](http://www.ge.com).
    - c. Or approved equal.
- B. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
  1. Movement Capability: Plus and minus 25 percent, minimum.
  2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's standard range.
  4. Products:
    - a. Pecora Corporation; Dynatrol, or GC-9 polysulfide: [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - b. Tremco Commercial Sealants & Waterproofing; Dymeric or Moro: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).
- C. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
  1. Products:
    - a. Pecora Corporation; AC-20 Acrylic: [www.pecora.com/#sle](http://www.pecora.com/#sle).
    - b. Sherwin-Williams Company; 850A Acrylic Latex Caulk: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
    - c. Tremco Commercial Sealants & Waterproofing; Tremflex 834: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).

### **2.05 ACCESSORIES**

- A. Backer Rod: Cylindrical cellular foam rod with surface that sealant will not adhere to, compatible with specific sealant used, and recommended by backing and sealant manufacturers for specific application.
  1. Type for Joints Not Subject to Pedestrian or Vehicular Traffic: ASTM C1330; Type O - Open Cell Polyurethane.
  2. Open Cell: 40 to 50 percent larger in diameter than joint width.
- B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- C. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- D. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

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

### **3.02 PREPARATION**

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

### **3.03 INSTALLATION**

- A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Provide joint sealant installations complying with ASTM C1193.
- C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.
- D. Install bond breaker backing tape where backer rod cannot be used.
- E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

### **3.04 CLEANING**

- A. Remove excess sealant and caulking materials and smears from adjacent surfaces as work progresses.
- B. Repair joints which have shrunk, sagged, run or have thin spots.

**END OF SECTION**

**SECTION 08 11 13**  
**HOLLOW METAL DOORS AND FRAMES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Non-fire-rated hollow metal doors and frames.
- B. Hollow metal frames for wood doors.
- C. Fire-rated hollow metal doors and frames.
- D. Thermally insulated hollow metal doors with frames.
- E. Tornado-resistant hollow metal doors and frames.

**1.02 RELATED REQUIREMENTS**

- A. Section 04 20 00 - Unit Masonry.
- B. Section 06 10 00 - Rough Carpentry.
- C. Section 07 92 00 - Joint Sealants.
- D. Section 08 71 00 - Door Hardware.
- E. Section 09 91 13 - Exterior Painting: Field painting.

**1.03 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2011.
- C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2014.
- D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2011.
- E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2016.
- G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2015.
- H. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014.
- I. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2015.
- J. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; National Storm Shelter Association; 2014.
- K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- L. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames; 2007.
- M. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- N. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2016.
- O. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.
- P. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- Q. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

- R. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

#### **1.04 SUBMITTALS**

- A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.
- B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, gauges, reinforcements, cutouts, installation and anchorage details, and any indicated finish requirements.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

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

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Hollow Metal Doors and Frames:
1. Fleming Door Products, an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  2. Republic Doors, an Allegion brand: [www.republicdoor.com](http://www.republicdoor.com).
  3. Steelcraft, an Allegion brand: [www.allegion.com](http://www.allegion.com).
  4. Or approved equal.

#### **2.02 PERFORMANCE REQUIREMENTS**

- A. Requirements for Hollow Metal Doors and Frames:
1. Steel Sheet: Comply with one or more of the following requirements; galvanized steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
  2. Accessibility: Comply with ICC A117.1 and ADA Standards.
  3. Exterior Door Top Closures: Flush end closure channel, with top and door faces aligned.
  4. Door Edge Profile: Manufacturers standard for application indicated.
  5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
  6. Zinc Coating for Typical Interior and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvanized) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
    - a. Based on SDI Standards: Provide at least A40/ZF120 (galvanized) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvanized) for corrosive locations.
- B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

#### **2.03 HOLLOW METAL DOORS**

- A. Stair and Corridor Egress, Exterior Doors: Thermally insulated.
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    - a. Level 1 - Standard-duty.
    - b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    - c. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
  2. Door Core Material: Vertical steel stiffeners with fiberglass batts.
  3. Door Thermal Resistance: R-Value of \_\_\_\_.
  4. Door Thickness: 1-3/4 inches, nominal.



5. Door Face Sheets: Flush.
  6. Door Finish: Factory primed and field finished.
- B. Building, Exterior Doors: Thermally insulated.
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    - a. Level 1 - Standard-duty.
    - b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    - c. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
  2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
  3. Door Thermal Resistance: R-Value of \_\_\_\_.
  4. Door Thickness: 1-3/4 inches, nominal.
  5. Door Face Sheets: Embossed; 3-Panel Craftsman.
  6. Door Finish: Factory primed and field finished.
- C. Stair Access, Fire-Rated Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    - a. Level 1 - Standard-duty.
    - b. Physical Performance Level C, 250,000 cycles; in accordance with ANSI/SDI A250.4.
    - c. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
  2. Fire Rating: 1 hour, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
  3. Provide units listed and labeled by UL (DIR).
    - a. Attach fire rating label to each fire rated unit.
  4. Smoke and Draft Control Doors: Self-closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire-resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following;
    - a. Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
    - b. Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
    - c. Label: Include the "S" label on fire-rating label of door.
  5. Door Thickness: 1-3/4 inches, nominal.
  6. Door Face Sheets: Flush.
  7. Door Finish: Factory primed and field finished.
- D. Storm Shelter, Tornado-Resistant Doors:
1. Design and size door and frame components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M.
    - a. Design Wind Loads: Comply with requirements of authorities having jurisdiction.
    - b. Wind-Borne Debris Resistance: Door and frame components shall have UL (DIR) approval for Large and Small Missile impact and pressure cycling at design wind loads.
  2. Tornado Shelter Application: Comply with ICC 500 standard.
    - a. Commercial: Designed and tested to comply with FEMA P-361 community shelter door assembly guidelines.
  3. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
    - a. Level 3 - Extra Heavy-duty.
    - b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
    - c. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
    - d. Zinc Coating: A60/ZF180 galvanized coating; ASTM A653/A653M.
  4. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
  5. Door Thickness: 1-3/4 inches, nominal.
  6. Door Face Sheets: Flush.
  7. Door Finish: Factory primed and field finished.

## **2.04 HOLLOW METAL FRAMES**

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Exterior Door Frames: Full profile/continuously welded type.
  - 1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
  - 2. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
  - 3. Frame Finish: Factory primed and field finished.
  - 4. Weatherstripping: Separate, see Section 08 71 00.
- C. Door Frames, Fire-Rated: Knock-down type.
  - 1. Fire Rating: Same as door, labeled.
  - 2. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
  - 3. Frame Finish: Factory primed and field finished.
- D. Tornado-Resistant Door Frames: With same tornado resistance as door; face welded or full profile/continuously welded construction, ground smooth, fully prepared and reinforced for hardware installation.
- E. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

## **2.05 FINISHES**

- A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

## **2.06 ACCESSORIES**

- A. Glazing: Fire-rated safety glazing, factory installed.
- B. Removable Stops: Formed sheet steel, mitered or butted corners; prepared for countersink style tamper proof screws.
- C. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
- D. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

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

### **3.02 INSTALLATION**

- A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
- B. Install fire rated units in accordance with NFPA 80.
- C. Coordinate frame anchor placement with wall construction.
- D. Install door hardware as specified in Section 08 71 00.
- E. Coordinate installation of electrical connections to electrical hardware items.

### **3.03 TOLERANCES**

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

### **3.04 ADJUSTING**

- A. Adjust for smooth and balanced door movement.

**END OF SECTION**

## **SECTION 08 14 16**

### **WOOD DOORS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Pre-hung, molded panel doors.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 06 20 00 - Finish Carpentry: Trim casings.
- B. Section 08 11 13 - Hollow Metal Doors and Frames.
- C. Section 08 71 00 - Door Hardware.
- D. Section 09 91 23 - Interior Painting: Field finishing of doors.

##### **1.03 REFERENCE STANDARDS**

- A. ANSI A135.4 - American National Standard for Basic Hardboard; 2012.
- B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2014.
- C. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- D. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- E. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

##### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
- C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory priming, and other details.
- D. Manufacturer's Installation Instructions: Indicate special installation instructions.
- E. Warranty, executed in Owner's name.

##### **1.05 QUALITY ASSURANCE**

##### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Package, deliver and store doors in accordance with specified quality standard.
- B. Accept doors on site in manufacturer's packaging, and inspect for damage.
- C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

##### **1.07 WARRANTY**

- A. Manufacturer Warranty: Provide manufacturer's warranty on interior doors for the life of the installation. Complete forms in Owner's name and register with manufacturer.
  - 1. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

#### **PART 2 PRODUCTS**

##### **2.01 MANUFACTURERS**

- A. Wood Veneer Faced Doors:
  - 1. Masonite International Corp.: [www.masonite.com](http://www.masonite.com).
  - 2. Jeld-Wen Inc.: [www.jeldwen.com](http://www.jeldwen.com).
- B. Molded Panel Doors
  - 1. Masonite International Corp.: [www.masonite.com](http://www.masonite.com).
  - 2. Baird Brothers Sawmill Inc.: [www.bairdbrothers.com](http://www.bairdbrothers.com).
  - 3. Jeld-Wen Inc.: [www.jeldwen.com](http://www.jeldwen.com).
  - 4. Or approved Equal.

## **2.02 DOORS**

- A. Doors: Refer to drawings for locations and additional requirements.
  - 1. Quality Standard: Economy Grade, Standard Duty performance, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
  - 2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.
- B. Interior Doors: 1-3/8 inches thick unless otherwise indicated; molded panel construction.
  - 1. Style: 3-Panel and flush as indicated on drawings.
  - 2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) labeled without any visible seals when door is open.
  - 3. Smoke and Draft Control Doors: In addition to required fire rating, provide door assemblies tested in accordance with UL 1784 with maximum air leakage of 3.0 cfm per sq ft of door opening at 0.10 inch wg pressure at both ambient and elevated temperatures for "S" label; if necessary, provide additional gasketing or edge sealing.
  - 4. Wood veneer facing for field opaque finish as indicated on drawings.
  - 5. Hardboard facing for field opaque finish.

## **2.03 DOOR AND PANEL CORES**

- A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.
- B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.
- C. Hollow Core Doors: Type - Standard (FSHC); plies and faces as indicated above.

## **2.04 DOOR FACINGS**

- A. Veneer Facing for Opaque Finish: Medium density overlay (MDO), in compliance with indicated quality standard.
- B. Hardboard Facing for Opaque Finish: ANSI A135.4, Class 2 - Standard, Molded Panel hardboard, 1/8 inch thick.
- C. Facing Adhesive: Type I - waterproof.

## **2.05 DOOR CONSTRUCTION**

- A. Fabricate doors in accordance with door quality standard specified.
- B. Cores Constructed with wood or MDF stiles and rails:
  - 1. Provide solid blocks at lock edge for hardware reinforcement.
- C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
  - 1. Mortise doors for 3-1/2 inch standard duty radius hinges.
  - 2. Face bore(s) for cylindrical lock, where scheduled, are to be 2-1/8" diameter at 2-3/8 inch backset.
- D. Vertical door edges to be beveled lock strike side and meeting rails.
- E. Factory fit and hang doors to frames constructed for the opening dimensions identified on the Drawings, with edge clearances in accordance with specified quality standard.
  - 1. Provide 3/8 inch clearance at bottom unless additional cut-off is indicated.

## **2.06 FRAMES**

- A. Jambs: Wood jambs shall be fabricated as a flat jamb with applied stops, or a one piece jamb with milled stops, solid or finger-jointed white pine. Factory primed, white.
- B. Hinges: Mortise jamb for 3-1/2 inch, standard duty radius hinges.
  - 1. 3 standard weight radius mortise hinges are required on doors 7'0" height or smaller.
- C. Strike: Jamb to be machined for a full lip cylindrical strike plate.
  - 1. Double door units shall include preparations for ball catch located at the top of door on both door panels designed to strike into the head jamb.

## **2.07 FINISHES**

- A. Factory prime door faces, stiles, and rails with manufacturer's standard water based latex primer; white.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

### **3.02 INSTALLATION**

- A. Install doors in accordance with manufacturer's instructions and specified quality standard.
- B. Use machine tools to cut or drill for hardware.
- C. Coordinate installation of doors with installation of frames and hardware.

**END OF SECTION**



**SECTION 08 43 13**  
**ALUMINUM-FRAMED STOREFRONTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Aluminum doors and frames.
- B. Interior fire-rated windows.
- C. Weatherstripping.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 50 00 - Metal Fabrications: Steel attachment devices.
- B. Section 06 10 00 - Rough Carpentry.
- C. Section 07 25 00 - Weather Barriers: Sealing framing to water-resistive air barrier installed on adjacent construction.
- D. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.
- E. Section 08 71 00 - Door Hardware: Hardware items other than specified in this section.
- F. Section 08 71 13 - Power Door Operators.
- G. Section 08 80 00 - Glazing: Glass and glazing accessories.
- H. Section 08 88 13 - Fire-Rated Glazing.

**1.03 REFERENCE STANDARDS**

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; 2015.
- B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- C. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2014.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- G. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- H. UL 9 - Standard for Fire Tests of Window Assemblies; Current Edition, Including All Revisions.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
- D. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
- E. Manufacturer's qualification statement.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

**1.06 FIELD CONDITIONS**

- A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

## **1.07 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
- C. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Aluminum-Framed Storefronts Manufacturers:
  - 1. EFCO Corporation; Series 402: [www.efcocorp.com](http://www.efcocorp.com).
  - 2. Kawneer North America; Trifab 451UT: [www.kawneer.com](http://www.kawneer.com).
  - 3. Manko Window Systems, Inc; 2450: [www.mankowindows.com](http://www.mankowindows.com).
  - 4. Oldcastle Building Envelope; Series 3000: [www.oldcastlebe.com](http://www.oldcastlebe.com).
  - 5. Tubelite, Inc; T14000: [www.tubeliteinc.com](http://www.tubeliteinc.com).
- B. Fire-Rated Aluminum-Framed Interior Windows
  - 1. SAFTIFIRST, a division of O'Keefe's Inc; GPX Series framing: [www.safti.com](http://www.safti.com).
  - 2. Or approved equal.

### **2.02 ALUMINUM-FRAMED STOREFRONT**

- A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
  - 1. Glazing Rabbet: For 1 inch insulating glazing.
  - 2. Glazing Position: Centered (front to back).
  - 3. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
  - 4. Finish: High performance organic coatings.
    - a. Factory finish all surfaces that will be exposed in completed assemblies.
    - b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
  - 5. Finish Color: As selected by Owner from manufacturer's standard line..
  - 6. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
  - 7. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
  - 8. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
  - 9. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
  - 10. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
  - 11. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

### **2.03 COMPONENTS**

- A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
  - 1. Glazing Stops: Flush.
- B. Insulating Glass Units: Vision glass, double glazed.
  - 1. Applications: Exterior glazing unless otherwise indicated.
  - 2. Space between lites filled with argon.
  - 3. Outboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
    - a. Tint: Clear.
    - b. Coating: Low-E (passive type), on #2 surface.



4. Inboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
  - a. Tint: Clear.
5. Total Thickness: 1 inch.
6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.30, nominal.
7. Visible Light Transmittance (VLT): 0.52 percent, nominal.
8. Solar Heat Gain Coefficient (SHGC): 0.25, nominal.
- C. Swing Doors: Glazed aluminum; medium stile.
  1. Thickness: 1-3/4 inches.
  2. Top Rail: 4 inches wide.
  3. Vertical Stiles: 4 inches wide.
  4. Bottom Rail: 10 inches wide.
  5. Glazing Stops: Square.
  6. Finish: Same as storefront.

## **2.04 ALUMINUM-FRAMED FIRE-RATED WINDOWS**

- A. Factory fabricated, factory finished aluminum framed fire-rated window system and related anchorage. and attachment devices.
  1. Frame:
    - a. Width: 2-1/2 inches.
    - b. Depth: 5 inches.
  2. Glazing Rabbet: For 1 inch fire-resistive safety glazing.
  3. Glazing Position: Centered (front to back).
  4. Internal framing: Internal tube steel framing shall conform to ASTM A501/A501M. Formed steel retainers shall be galvanized conforming to ASTM A653/A653M/ASTM A527.
  5. Fasteners: Type recommended by manufacturer. No exposed fasteners allowed.
  6. The framing system shall insulate against the effects of fire, smoke and heat transfer from either side.
    - a. The perimeter of the framing system to the rough opening shall be firmly packed with mineral wool fire stop insulation or appropriately rated intumescent sealant.
  7. Finish Color: As selected by Owner from manufacturer's standard line..
- B. Fire Rating: System rated for 45 minutes, temperature rise complying with UL 9 and NFPA 80.
- C. Fire-Rated Safety Glazing: See Section 08 88 13 - Fire-Rated Glazing.

## **2.05 MATERIALS**

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Fasteners: Stainless steel.
- C. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

## **2.06 FINISHES**

- A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

## **2.07 HARDWARE**

- A. For each door, include weatherstripping, sill sweep strip, and threshold.
- B. Common Area/ Egress Door Hardware: See Section 08 71 00.
- C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
- D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
- E. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

### **3.02 INSTALLATION**

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Set thresholds in bed of sealant and secure.
- J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

### **3.03 TOLERANCES**

- A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
- B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

### **3.04 ADJUSTING**

- A. Adjust operating hardware and sash for smooth operation.

### **3.05 CLEANING**

- A. Remove protective material from pre-finished aluminum surfaces.

**END OF SECTION**

## **SECTION 08 53 13**

### **VINYL WINDOWS**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Vinyl-framed, factory-glazed windows.
- B. Operating hardware.
- C. Insect screens.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 01 00 00 - General Requirements: IECC Energy Efficiency testing.
- B. Section 04 20 00 - Unit Masonry.
- C. Section 06 10 00 - Rough Carpentry.
- D. Section 07 21 00 - Thermal Insulation: Perimeter foam insulation air seal between window frame and adjacent construction.
- E. Section 07 25 00 - Weather Barriers: Sealing frames to water-resistive air barrier installed on adjacent construction.
- F. Section 07 46 46 - Fiber-Cement Siding.
- G. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

##### **1.03 REFERENCE STANDARDS**

- A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for windows, doors, and skylights; 2011.
- B. AAMA 701/702 - Combined Voluntary Specifications for Pile Weatherstrip and Replaceable Fenestration Weatherseals; 2011.
- C. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
- D. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2004 (Reapproved 2012).
- E. ASTM E1423 - Standard Practice for Determining the Steady State Thermal Transmittance of Fenestration Systems; 2014.
- F. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2007 (Reapproved 2016).
- G. ASTM F2090-13 - Standard Specification for Window Fall Prevention Devices With Emergency Escape (Egress) Release Mechanisms; 2013.
- H. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact; 2014.
- I. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2014.

##### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide component dimensions, anchors, fasteners, glass, and internal drainage.
- C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related work, and installation requirements.
- D. Manufacturer's Certificate: Certify that products of this section meet or exceed specified requirements.
- E. Grade Substantiation: Prior to submitting shop drawings or starting fabrication, submit one of the following showing compliance with specified grade:
  - 1. Evidence of AAMA Certification.
  - 2. Test report(s) by independent testing agency itemizing compliance and acceptable to authorities having jurisdiction.

- F. Test Reports: Prior to submitting shop drawings or starting fabrication, submit test report(s) by independent testing agency showing compliance with performance requirements in excess of those prescribed by specified grade.
- G. Egress Units Compliance: Certify that bedroom window unit's net opening size and dimensions meet or exceed current minimum code requirements for use as a means of emergency egress.

#### **1.05 QUALITY ASSURANCE**

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

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Protect finished surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.
- B. Jig, brace, and box the window frame assemblies for transport to minimize flexing of members or joints.

#### **1.07 FIELD CONDITIONS**

- A. Do not install sealants when ambient temperature is less than 40 degrees F.
- B. Maintain this minimum temperature during and after installation of sealants.

#### **1.08 WARRANTY**

- A. Manufacturer's Warranty: Provide five-year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same. Include coverage for degradation of vinyl color finish. Complete form in Owner's name and register with manufacturer.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Vinyl Windows:
  - 1. Alside, Inc; Fusion Series: [www.alside.com/#sle](http://www.alside.com/#sle).
  - 2. All Temp Windows Inc.; Series 1800: [www.alltempwindows.com](http://www.alltempwindows.com)
  - 3. Jeld-Wen Inc.; Builders Vinyl Series: [www.jeldwen.com](http://www.jeldwen.com).
  - 4. Milgard Manufacturing; StyleLine Series: [www.milgard.com](http://www.milgard.com).
  - 5. Alliance Window Systems; Windgate Series: [www.alliancewindows.com](http://www.alliancewindows.com)

#### **2.02 DESCRIPTION**

- A. Vinyl Windows: Factory fabricated frame and sash members of extruded, hollow, ultra-violet-resistant, polyvinyl chloride (PVC) with integral color; with factory-installed glazing, hardware, related flashings, anchorage and attachment devices.
  - 1. Configuration: As indicated on drawings.
    - a. Product Type: H - Hung window, vertically sliding; Single Hung.
    - b. Egress Units: Window units installed in dwelling unit bedrooms shall meet or exceed minimum requirements for classification as emergency egress units per the currently adopted edition of the building code.
  - 2. Color: White.
  - 3. Size to fit openings with minimum clearance around perimeter of assembly providing necessary space for perimeter seals.
  - 4. Operable Units: Double weatherstripped.
  - 5. Framing Members: Fusion welded corners and joints, with internal reinforcement where required for structural rigidity; concealed fasteners.
  - 6. System Internal Drainage: Drain to exterior side by means of weep drainage network any water entering joints, condensation within glazing channel, or other migrating moisture within system.
  - 7. Glazing Stops, Trim, Flashings, and Accessory Pieces: Formed of rigid PVC, fitting tightly into frame assembly.
  - 8. Mounting Flange: Integral to frame assembly, providing weather stop at entire perimeter of frame.
  - 9. Insect Screens: Tight fitting for operating sash location.
- B. Energy Star Rating: Provide windows eligible for Energy Star Rating.

## **2.03 PERFORMANCE REQUIREMENTS**

- A. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific window type:
  - 1. Performance Class (PC): R.
  - 2. Performance Grade (PG): 15, with minimum design pressure (DP) of 15.04 psf.
- B. Air Leakage: Maximum of 0.30 cu ft/minute/sq ft at 1.57 psf differential pressure, when tested in accordance with ASTM E283.
- C. Thermal Transmittance: U-factor of 0.35, maximum, that includes window glazing and frame system based on average window size required for project and determined in accordance with AAMA 1503, ASTM E1423, or NFRC 100.
- D. Solar Heat Gain Coefficient (SHGC): SHGC value of 0.27 maximum.
- E. Visible Light Transmittance: value of 0.52 minimum.
- F. Forced Entry Resistance (FER): Tested to comply with ASTM F588 requirements having at least Grade 10 performance for each required window assembly.

## **2.04 COMPONENTS**

- A. Glazing: Insulated double pane, annealed glass, clear, low-E coated, argon filled, with glass thicknesses as recommended by manufacturer for specified wind conditions.
  - 1. Provide tempered glass where required by Code for hazardous locations.
  - 2. Glass Stops: Snap-on PVC glazing bead with color to match sash and frame.
- B. Frame Depth: 3-1/4 inch minimum.
- C. Simulated Divided Lite Grid: Installed between panes of insulating glass, 5/8 inch wide flat metal bars, color to match frame and sash.
  - 1. Pattern: Manufacturer's standard layout.
- D. Insect Screens: Aluminum, extruded or roll-formed frame with mitered and reinforced corners; apply screen mesh taut to frame; secure to window with hardware to allow easy removal.
  - 1. Hardware: Manufacturer's standard; quantity as required per screen.
  - 2. Screen Mesh: Vinyl-coated fiberglass, window manufacturer's standard mesh.
  - 3. Frame Finish: Manufacturer's standard, color to match window frame and sash color.
- E. Operable Sash Weatherstripping: High density polypropylene pile; permanently resilient, profiled to maintain weather seal in accordance with AAMA 701/702.
- F. Fasteners: Galvanized steel.
- G. Accessories: Provide related flashings, anchorage and attachment devices as necessary for full assembly.
- H. Glazing Sealant: Manufacturer's standard, tested, sealant; factory installed.
- I. Sealants for Setting Window Sill Pan Flashing: Provide silicone sealant; in compliance with ASTM E2112 installation practices.

## **2.05 HARDWARE**

- A. Vertical Sliding Sash: Metal and nylon spiral friction slide cylinder, provide two for each sash and jamb.
- B. Sash lock: Lever handle and keeper with cam lock, provide at least one for each operating sash.
- C. Window Opening Control Devices: ASTM F2090-13 opening control devices that limit opening size to less than 4 inches maximum with release function to permit window to open fully.
  - 1. Required for all Dwelling Unit operable windows when sill is less than 36 inches above finish floor, and window unit is located greater than 72 inches above finish grade.
- D. Finish of Exposed Hardware: Baked enamel, match interior sash and frame color.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify wall openings and adjoining water-resistive air barrier seal materials are ready to receive this work.

### **3.02 INSTALLATION**

- A. Install window unit assemblies in accordance with manufacturers instructions and applicable building codes.
- B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities as necessary.
- C. Provide continuous shim support along full length of sill.
- D. Align window plumb and level, free of warp or twist, and maintain dimensional tolerances and alignment with adjacent work.
- E. Set sill members and sill flashing in continuous bead of sealant.
- F. Provide thermal continuity of the building envelope. Fill shim spaces at perimeter of assembly with gap-filling foam specified in Section 07 21 00 - Thermal Insulation.

### **3.03 ADJUSTING**

- A. Adjust hardware for smooth operation and secure weathertight closure.

### **3.04 CLEANING**

- A. Remove protective material from pre-finished surfaces.
- B. Wash surfaces by method recommended and acceptable to window manufacturer; rinse and wipe surfaces clean.
- C. Remove excess glazing sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer and appropriate for application indicated.

**END OF SECTION**

**SECTION 08 71 00**  
**DOOR HARDWARE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Hardware for hollow metal, aluminum, and wood doors.
- B. Hardware for fire-rated doors.
- C. Electrically operated and controlled hardware.
- D. Thresholds.
- E. Weatherstripping and gasketing.

**1.02 RELATED REQUIREMENTS**

- A. Section 08 11 13 - Hollow Metal Doors and Frames.
- B. Section 08 14 16 - Wood Doors.
- C. Section 08 43 13 - Aluminum-Framed Storefronts: Door hardware, except as noted in section.
- D. Section 08 71 13 - Power Door Operators.
- E. Section 28 10 00 - Access Control: Electronic access control devices.

**1.03 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. BHMA A156.1 - American National Standard for Butts and Hinges; 2013.
- C. BHMA A156.3 - American National Standard for Exit Devices; 2014.
- D. BHMA A156.4 - American National Standard for Door Controls - Closers; 2013.
- E. BHMA A156.7 - American National Standard for Template Hinge Dimensions; 2014.
- F. BHMA A156.16 - American National Standard for Auxiliary Hardware; 2013.
- G. BHMA A156.17 - American National Standard for Self Closing Hinges & Pivots; 2014.
- H. BHMA A156.18 - American National Standard for Materials and Finishes; 2012.
- I. BHMA A156.21 - American National Standard for Thresholds; 2014.
- J. BHMA A156.28 - American National Standard for Recommended Practices for Mechanical Keying Systems; 2013.
- K. BHMA A156.31 - American National Standard for Electric Strikes and Frame Mounted Actuators; 2013.
- L. BHMA A156.36 - American National Standard for Auxiliary Locks; 2014.
- M. DHI (KSN) - Keying Systems and Nomenclature; 1989.
- N. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- P. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.
- Q. UL (DIR) - Online Certifications Directory; current listings at [database.ul.com](http://database.ul.com).

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- D. Specimen warranty.
- E. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.

1. Lock Cylinders: One for each master keyed group.
2. Leversets and Dead Latches: One for each type specified.
3. Tools: One set of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

#### **1.07 WARRANTY**

- A. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
  1. Closers: Five years, minimum.
  2. Exit Devices: Three years, minimum.
  3. Locksets and Cylinders: Three years, minimum.
  4. Other Hardware: Two years, minimum.

### **PART 2 PRODUCTS**

#### **2.01 DESIGN AND PERFORMANCE CRITERIA**

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Provide door hardware products that comply with the following requirements:
  1. Applicable provisions of federal, state, and local codes.
  2. Accessibility: UFAS, ADA Standards, and ICC A117.1.
  3. Auxiliary Hardware: BHMA A156.16.
- D. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Door Hardware Schedule at end of this section.
- E. Fasteners:
  1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
    - a. Aluminum fasteners are not permitted.
    - b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
  2. Fire-Rated Applications: Comply with NFPA 80.
    - a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
    - b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

#### **2.02 HINGES**

- A. Manufacturers:
  1. McKinney; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  2. Bommer Industries, Inc: [www.bommer.com](http://www.bommer.com).
  3. C. R. Laurence Co., Inc: [www.crl-arch.com](http://www.crl-arch.com).
  4. Hager Companies: [www.hagerco.com/#sle](http://www.hagerco.com/#sle).
  5. Stanley Manufacturing Co.: [www.stanleyhardware.com](http://www.stanleyhardware.com).
- B. Hinges: Comply with BHMA A156.1, Grade 3.
  1. Self Closing Hinges: Comply with BHMA A156.17.
  2. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
    - a. Provide hinge width required to clear surrounding trim.
  3. Provide hinges on every swinging door.
  4. Provide self-closing spring hinges on dwelling unit entry doors.



5. Provide ball-bearing hinges at each door with closer.
6. Provide non-removable pins on exterior outswinging doors.
7. Provide following quantity of butt hinges for each door:
  - a. Doors From 60 inches High up to 90 inches High: Three hinges.
  - b. Doors 90 inches High up to 120 inches High: Four hinges.

## **2.03 EXIT DEVICES**

- A. Manufacturers:
  1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  2. C. R. Laurence Company, Inc: [www.crl-arch.com](http://www.crl-arch.com).
  3. Hager Companies: [www.hagerco.com](http://www.hagerco.com).
  4. Von Duprin, an Allegion brand: [www.allegion.com/us](http://www.allegion.com/us).
- B. Exit Devices: Comply with BHMA A156.3, Grade 3.
  1. Lever design to match lockset trim.
  2. Provide cylinder with cylinder dogging or locking trim.
  3. Provide exit devices properly sized for door width and height.
  4. Provide strike as recommended by manufacturer for application indicated.

## **2.04 ELECTRIC STRIKES**

- A. Manufacturers:
  1. Adams Rite or Securitron; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  2. Pamex, Inc; Electric Strikes: [www.pamexinc.com](http://www.pamexinc.com).
- B. Electric Strikes: Comply with BHMA A156.31, Grade 1.
  1. Provide UL (DIR) listed burglary-resistant electric strike; style to suit locks.
  2. Provide non-handed 24 VDC electric strike suitable for door frame material and scheduled lock configuration.
  3. Provide field selectable Fail Safe/Fail Secure modes.
  4. Provide transformer and rectifier as necessary for complete installation.

## **2.05 CYLINDRICAL LOCKS**

- A. Manufacturers:
  1. Basis of Design: Schlage 'Elan'.
  2. Sargent or Yale; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  3. Hager Companies: [www.hagerco.com](http://www.hagerco.com).
  4. Schlage, an Allegion brand: [www.allegion.com/us](http://www.allegion.com/us).
  5. Weslock Door Hardware Inc.: [www.weslock.com](http://www.weslock.com).
- B. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 3.
  1. Bored Hole: 2-1/8 inch diameter.
  2. Latchbolt Throw: 1/2 inch, minimum.
  3. Backset: 2-3/4 inch unless otherwise indicated.
  4. Provide a lock for each door, unless otherwise indicated that lock is not required.
  5. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.

## **2.06 AUXILIARY LOCKS (DEADLOCKS)**

- A. Manufacturers:
  1. Basis of Design: Schlage 'B60' & 'B680'.
  2. Yale; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  3. Hager Companies: [www.hagerco.com](http://www.hagerco.com).
  4. Schlage, an Allegion brand: [www.allegion.com/us](http://www.allegion.com/us).
  5. Weslock Door Hardware Inc.: [www.weslock.com](http://www.weslock.com).
- B. Auxiliary Locks (Deadlocks): Comply with BHMA A156.36, Grade 3.
  1. Type: Bored (cylindrical).
  2. Backset: 2-3/4 inch, unless otherwise indicated.
  3. Bolt Throw: 1 inch, with latch made of hardened steel.
  4. Provide strike that matches frame.

## **2.07 CLOSERS**

- A. Manufacturers; Surface Mounted:
  - 1. Basis of Design: Falcon SC93/94; Jamb top.
  - 2. Sargent, Yale, or AdamsRite; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  - 3. C. R. Laurence Company, Inc: [www.crl-arch.com](http://www.crl-arch.com).
  - 4. Hager Companies: [www.hagerco.com](http://www.hagerco.com).
  - 5. Falcon or LCN, an Allegion brand: [www.allegion.com/us](http://www.allegion.com/us).
- B. Closers: Comply with BHMA A156.4, Grade 3.
  - 1. Type: Surface mounted to door.
  - 2. Provide door closer on each exterior door of the common areas.
  - 3. Provide door closer on each fire-rated and smoke-rated door of the common areas.
  - 4. At outswinging exterior doors, mount closer on interior side of door.
  - 5. Provide adapter plate where required.

## **2.08 WALL STOPS**

- A. Manufacturers:
  - 1. Basis of Design: Trimco 1270 Series.
  - 2. Rockwood; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  - 3. Hager Companies: [www.hagerco.com](http://www.hagerco.com).
  - 4. Hiawatha, Inc, division of Activar Construction Products Group, Inc: [www.activarcpg.com/hiawatha](http://www.activarcpg.com/hiawatha).
  - 5. Trimco: [www.trimcohardware.com](http://www.trimcohardware.com).
- B. Wall Stops: Comply with BHMA A156.16, Grade 3 and Resilient Material Retention Test as described in this standard.
  - 1. Provide wall stops to prevent damage to wall surface upon opening door.
  - 2. Type: Flexible stem wall stop.
  - 3. Material: Stainless steel spring with vinyl cap.

## **2.09 THRESHOLDS**

- A. Manufacturers:
  - 1. Pemko; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  - 2. Hager Companies: [www.hagerco.com](http://www.hagerco.com).
  - 3. National Guard Products, Inc: [www.ngpinc.com](http://www.ngpinc.com).
- B. Thresholds: Comply with BHMA A156.21.
  - 1. Provide threshold at each exterior door, unless otherwise indicated.
  - 2. Type: Low Profile.
    - a. Thresholds at outswing exterior doors may be rabbeted with door stop type; 1/4 inch vertical rise, 1/2 inch total height; maximum 1:2 bevel.
  - 3. Material: Aluminum.
  - 4. Threshold Surface: Thermally broken.
  - 5. Field cut threshold to profile of frame and width of door sill for tight fit.
  - 6. Provide non-corroding fasteners at exterior locations.

## **2.10 BALL CATCH**

- A. Manufacturers:
  - 1. Basis of Design: Ives 347.
  - 2. Rockwood; an Assa Abloy Group company: [www.assaabloydss.com](http://www.assaabloydss.com).
  - 3. Ives, an Allegion brand: [www.allegion.com/us](http://www.allegion.com/us).
- B. Ball Catch: Provide on doors not provided with latchsets that must stay in closed position within the frame.
  - 1. Location: Mount ball catch at top of door with strike plate fastened to head of door frame.
  - 2. Material: Brass.

## **2.11 VIEWER**

- A. Manufacturers:
  - 1. Basis of Design: Ives U696.

2. Ives, an Allegion brand: [www.allegion.com/us](http://www.allegion.com/us).
  3. Prime-Line Inc: [www.primeline.net](http://www.primeline.net)
  4. Gatehouse Inc.: [www.lowes.com](http://www.lowes.com)
- B. Viewer: Provide at inside of door at eye level to see who is on outside of door.
1. Material: Stainless steel.
  2. Size: 1/2 inch diameter mounting hole.
  3. View: 160 degree field of view.
  4. Finish: Brushed nickel.

## **2.12 KEY CONTROL SYSTEMS**

- A. Key Control Systems: Comply with guidelines of BHMA A156.28.
1. Provide keying information in compliance with DHI (KSN) standards.
  2. Keying: All locks Master keyed.
    - a. Dwelling Units: All exterior doors keyed alike.
    - b. Community Building: All exterior doors keyed alike.
  3. Supply keys in following quantities:
    - a. 4 each Master keys.
    - b. 2 each Keys for each keyed core.

## **2.13 FIRE DEPARTMENT LOCK BOX**

- A. Manufacturers:
1. Basis of Design: Knox Box 3200 Series.
  2. Knox Company; Knox-Box Rapid Entry System: [www.knoxbox.com](http://www.knoxbox.com).
  3. Or approved equal.
- B. Fire Department Lock Box:
1. Heavy-duty, surface mounted, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers.
  2. Capacity: Holds 10 keys.
  3. Finish: Manufacturer's standard silver.

## **2.14 FINISHES**

- A. Finishes: Provide door hardware of same finish, unless otherwise indicated.
1. Primary Finish: 619; satin nickel plated, clear coated, with brass or bronze base material; BHMA A156.18.
  2. Exceptions:
    - a. Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.
    - b. Hinges for Fire-Rated Doors: Steel base material with painted finish, in compliance with NFPA 80.
    - c. Door Closer Covers and Arms: Color as selected by Architect from manufacturer's standard colors unless otherwise indicated.
    - d. Aluminum Surface Trim and Gasket Housings: Anodized to match door panel finish, not other hardware, unless otherwise indicated.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

### **3.02 INSTALLATION**

- A. Install hardware in accordance with manufacturer's instructions and applicable codes.
- B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- C. Use templates provided by hardware item manufacturer.
- D. Do not install surface mounted items until application of finishes to substrate are fully completed.

- E. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list, unless noted otherwise on drawings.
  - 1. Mounting heights in compliance with ANSI, UFAS, or ADA Standards, where applicable:
    - a. Locksets: 36 inch.
    - b. Deadlocks (Deadbolts): 41-1/2 inch.
    - c. Door Viewer: accessible unit height 42 inch; typical unit height 60 inch.
- F. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

### **3.03 ADJUSTING**

- A. Adjust hardware for smooth operation.
- B. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

### **3.04 CLEANING**

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

### **3.05 PROTECTION**

- A. Do not permit adjacent work to damage hardware or finish.

## **PART 4 SCHEDULES**

### **4.01 HARDWARE SETS**

- A. Group No 01: Building - Main Entry Door.
  - 1. Provide for each leaf in pair.
  - 2. For use also on Rear Entry Door to patio.
  - 3. Interconnect Power Operator and Access Control.

2	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Power- Transfer Hinge
1	EA	Electric Exit Device w/ outside keyed Leverset Trim
1	PR	Top and Bottom Rods
1	EA	Power Door Operator
2	EA	Push Plate Actuator - wall mounted
1	EA	Proximity Reader - exterior
1	EA	Accessible Threshold
- B. Group No 02: Building - Corridor and Stair Tower Egress Doors.
 

3	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Exit Device w/ outside keyed Leverset Trim
1	EA	Closer
1	EA	Accessible Threshold
- C. Group No 03: Building - Stair Tower Exit Access Doors; 60-Min Fire-rated.
  - 1. Provide Fire-Rated hardware.
 

3	EA	Hinges - 3-1/2 inch x 3-1/2 inch
1	EA	Exit Device w/ Leverset Trim
1	EA	Closer
1	Set	Smoke Gasket/ Retractable Sweep

D. **Group No 04: Building Exterior Trash Chute Room - Paired Doors.**

1. Provide for each leaf in pair as noted.

- 3 EA Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Dead latch - single cylinder with thumb turn - active leaf
- 1 EA Passage Leverset - active leaf
- 1 PR Flush Bolts - inactive leaf
- 1 EA Dummy Leverset - inactive leaf
- 1 EA Closer
- 1 EA Accessible Threshold

E. **Group No 05: Common Area - Toilet Room Doors.**

- 3 EA Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Privacy Leverset w/ push-button latching
- 1 EA Wall-mounted Stop

F. **Group No 06: Common Area - Secure Interior Doors; 20-Min Fire-rated.**

- 1. Provide Fire-rated hardware.
- 2. Provide in addition Dead Latch w/ thumb turn at Leasing Office.

- 3 EA Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Locking Leverset
- 1 EA Closer

G. **Group No 07: Common Area - Mechanical Room Door; 20-Min Fire-rated.**

- 1. Provide Fire-rated hardware.

- 3 EA Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Exit Device w/ locking Leverset Trim
- 1 EA Closer

H. **Group No 08: Common Area - Resident Lounge Storage Closet; 20-Min Fire-rated..**

- 1. Provide Fire-rated hardware.
- 2. Provide for each leaf in pair as noted.

- 3 EA Self-closing spring Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Locking Leverset - active leaf
- 1 EA Flush Bolts - inactive leaf
- 1 EA Dummy Leverset - inactive leaf

I. **Group No 09: Common Area - TV Room and Library - Paired Doors; 20-Min Fire-rated**

- 1. Provide Fire-rated hardware.
- 2. Provide for each leaf in pair as noted.

- 3 EA Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Dead latch - single cylinder with thumb turn - active leaf
- 1 EA Passage Leverset - active leaf
- 1 PR Flush Bolts - inactive leaf
- 1 EA Dummy Leverset - inactive leaf
- 1 Set Smoke Gaskets/ Retractable Floor Sweep
- 1 EA Closer

J. Group No 10: Dwelling Unit - Entry Door; 20-Min Fire-rated.

1. Provide Fire-rated hardware.

- 3 EA Self-closing spring Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Dead latch - single cylinder w/ thumb turn
- 1 EA Passage Leverset
- 1 EA Viewer (peephole) (2 ea. at accessible dwelling units)
- 1 EA Smoke Gasket and retractable sweep
- 1 EA Wall-mounted Stop

K. Group No 11: Dwelling Unit - Bedroom and Bath Doors.

- 3 EA Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Privacy Leverset w/ push-button latching
- 1 EA Wall-mounted Stop

L. Group No 12: Dwelling Unit - Closet Double Swing Doors.

1. Provide for each door in the pair.

- 3 EA Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Dummy Leverset
- 1 EA Ball Catch
- 1 EA Wall-mounted Stop

M. Group No 13: Dwelling Unit - Other Interior Doors.

- 3 EA Hinges - 3-1/2 inch x 3-1/2 inch
- 1 EA Passage Leverset
- 1 EA Wall-mounted Stop

**END OF SECTION**

**SECTION 08 71 13**  
**POWER DOOR OPERATORS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Operators for swinging doors.
- B. Controllers, actuators, and safety devices.

**1.02 RELATED REQUIREMENTS**

- A. Section 08 43 13 - Aluminum-Framed Storefronts
- B. Section 28 10 00 - Access Control: Connection to access control system; access control devices used as actuators.
- C. Section 28 46 21.13 - Conventional Fire-Alarm Systems.

**1.03 REFERENCE STANDARDS**

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. BHMA A156.19 - American National Standard for Power Assist and Low Energy Power Operated Doors; 2013.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. NFPA 101 - Life Safety Code; 2015.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate power door operators with balance of door hardware and electrical work required for each affected door opening.
  - 1. Templates: Check other sections' shop drawings to confirm that adequate provisions are in place for locating and installing power door operators.
  - 2. Electrical System Roughing-in: Coordinate layout and installation of power door operators with connections to power supplies, remote activation devices, and electric door latching hardware.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings:
- C. Product Data: Provide data on system components, sizes, features, and finishes.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and manufacturer's hardware and component templates.
- E. Maintenance Data: Include manufacturer's parts list and maintenance instructions for each type of hardware and operating component.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Operators for Swinging Doors:
  - 1. Detex Corporation; AO19-2: [www.detex.com](http://www.detex.com).
  - 2. Or approved equal.

**2.02 POWER DOOR OPERATORS - GENERAL**

- A. Electrically Operated or Controlled Hardware: Provide necessary power supplies, relays, and interfaces as required for proper operation; provide wiring between control components and to building power connection in compliance with NFPA 70.
- B. Comply with ADA Standards for egress requirements.
- C. Comply with NFPA 101 and requirements of authorities having jurisdiction; provide units selected for actual door weight and for light pedestrian traffic unless otherwise indicated.
- D. Exterior and Vestibule Doors: Provide equipment suitable for ambient operating temperature range of minus 20 to plus 140 degrees F.

- E. Exterior Doors: Provide units capable of operating, closing, and holding doors closed under positive and negative differential pressure; if necessary, provide power closing.

## **2.03 OPERATORS FOR SWINGING DOORS**

- A. Door Operator: Electromechanical.
  - 1. Applications: Include operators for single doors.
  - 2. Electromechanical Operators: 1/4 hp minimum, self-contained, gear driven, with release clutch.
  - 3. Speed Control: Variable, field-adjustable opening and closing cycles.
  - 4. Functionality: Low-energy power open, power close operation.
    - a. Low-Energy Power Operators: Comply with BHMA A156.19; operator activated by pushing or pulling the door or by manual actuator, not a sensor; safeties not required.
      - 1) Kinetic Energy of Door in Motion: 1.25 lbf ft, maximum.
      - 2) Force Required to Prevent Stopped Door From Opening or Closing: 15 lbf, maximum, measured at 1 inch from the latch edge of the door at any point in the swing cycle.
      - 3) Force Required to Release Latch When Unpowered: 15 lbf, maximum, measured at 1 inch from the latch edge of the door at any point in the swing cycle.
      - 4) Force Required to Set Door in Motion When Unpowered: 30 lbf, maximum, measured at 1 inch from the latch edge of the door at any point in the closing cycle.
      - 5) Force Required to Fully Open Door When Unpowered: 15 lbf, maximum, measured at 1 inch from the latch edge of the door at any point in the closing cycle.
  - 5. Mounting: Surface mounted overhead.
  - 6. Components:
    - a. Header Case: Manufacturer's standard extruded aluminum profile containing door operator and door mounting components.
    - b. Motor and Gearbox Assembly: Manufacturer's standard sealed motor, gearbox, and drive belt.
  - 7. Power Supply Units: Self-contained, electrically operated, and integrated with door operator.
  - 8. Actuators: Manufacturer's standard.
    - a. Push-Side Actuator: Push plate; wall-mounted.
    - b. Pull-Side Actuator: Push plate; wall-mounted.
  - 9. Hold Open: Toggle switch at inside head of doors.

## **2.04 CONTROLLERS, ACTUATORS, AND SAFETY DEVICES**

- A. Actuators: Manufacturer's standard for products specified and as specified below.
  - 1. Push Plate Actuator: Standard, wall mounted, surface mounted, momentary contact type; satin stainless steel plate; 4 inches diameter; labeled PUSH.

## **2.05 FINISHES**

- A. Aluminum Finishes: Manufacturer's standard.
  - 1. Class II Natural Anodized Finish: Clear anodic coating; AAMA 611 AA-M12C22A31, minimum dry film thickness (DFT) of 0.4 mil, 0.0004 inch.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that electric power is available, in the correct location, and of the correct characteristics.

### **3.02 INSTALLATION**

- A. Coordinate installation of components with related and adjacent work.
- B. Install equipment in accordance with manufacturer's instructions.

### **3.03 ADJUSTING**

- A. Adjust door equipment for correct function and smooth operation.



### **3.04 CLEANING**

- A. Remove temporary protection, clean exposed surfaces.

**END OF SECTION**



**SECTION 08 88 13**  
**FIRE-RATED GLAZING**

**PART 1 GENERAL**

**1.01 RELATED REQUIREMENTS**

- A. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing furnished as part of fire-rated window assembly.

**1.02 REFERENCE STANDARDS**

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2015).
- C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014a.
- D. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.
- E. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2016a.
- F. GANA (SM) - GANA Sealant Manual; 2008.
- G. ICC (IBC) - International Building Code; 2015.
- H. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2012.
- I. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.
- J. UL 10B - Standard for Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- K. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- L. UL 263 - Standard for Fire Tests of Building Construction and Materials; Current Edition, Including All Revisions.

**1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data on Glazing Unit Glazing Types: Provide structural, physical, and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Fire-Resistance-Rated Glass:
  - 1. Manufacturers:
    - a. SAFTIFIRST, a division of O'Keeffe's Inc; SuperLite II-XL: [www.safti.com](http://www.safti.com).

**2.02 GLASS MATERIALS**

**2.03 GLAZING UNITS**

- A. Fire-Resistance-Rated Glazing: Type, thickness, and configuration of glazing that contains flames, smoke, and blocks radiant heat, as required to achieve indicated fire rating period exceeding 45 minutes.
  - 1. Applications:
    - a. Glazing in fire-rated window assembly.
  - 2. Provide products listed by UL (DIR) and approved by authorities having jurisdiction.
  - 3. Safety Glazing Certification: 16 CFR 1201 Category II.
  - 4. Fire Rating Period: 45 minutes.
  - 5. Markings for Fire-Resistance-Rated Glazing Assemblies: Provide permanent markings on fire-resistance-rated glazing in compliance with ICC (IBC), local building code, and authorities having jurisdiction.
    - a. "W" - meets wall assembly criteria of ASTM E119 or UL 263 fire test standards.

- b. "D" - meets fire door assembly criteria of NFPA 252, UL 10B, or UL 10C fire test standards.
- c. "H" - meets fire door assembly hose stream test of NFPA 252, UL 10B, or UL 10C fire test standards.
- d. "T" - meets temperature rise of not more than 450 degrees F above ambient at end of 30 minutes fire exposure in accordance with NFPA 252, UL 10B, or UL 10C fire test standards.
- e. "XXX" - placeholder that represents fire rating period, in minutes.
- 6. Products:
  - a. SAFTIFIRST, a division of O'Keeffe's Inc; SuperLite II-XL 45: [www.safti.com](http://www.safti.com).

## **2.04 GLAZING COMPOUNDS**

- A. Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, nonstaining; ASTM C920, Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; Black color.

## **2.05 ACCESSORIES**

- A. Setting Blocks: Aluminum silicate, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.
- B. Glazing Gaskets: Flexible intumescent seals.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

## **3.02 PREPARATION**

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

## **3.03 INSTALLATION - GENERAL**

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers unless more stringent requirements are indicated, including those in referenced glazing standards.
- B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
- C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- F. Prevent glass from contact with contaminating substances that may result from construction operations including, but not limited to weld spatter, fire-safing, plastering, mortar droppings, etc.

## **3.04 INSTALLATION - WET/DRY GLAZING METHOD (TAPE AND SEALANT)**

- A. Application - Interior Glazed: Set glazing infills from interior of building.
- B. Cut glazing tape to length and install against permanent stops, projecting 1/16 inch above sightline.
- C. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.

- D. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
- E. Install removable stops, spacer shims inserted between glazing and applied stops at 24-inch intervals, 1/4 inch below sight line.
- F. Fill gaps between pane and applied stop with GC-1 type sealant to depth equal to bite on glazing, to uniform and level line.
- G. Carefully trim protruding tape with knife.

### **3.05 FIELD QUALITY CONTROL**

- A. Manufacturer Services: Provide services of glazing manufacturer's field representative to observe installation of their products.

### **3.06 CLEANING**

- A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- B. Remove nonpermanent labels immediately after glazing installation is complete.
- C. Clean glass and adjacent surfaces after sealants are fully cured.
- D. Clean glass on both exposed surfaces not more than four days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

### **3.07 PROTECTION**

- A. After installation, mark pane with 'X' by using removable plastic tape or paste; do not mark heat-absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

**END OF SECTION**



## SECTION 08 91 00

### LOUVERS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Louvers, frames, and accessories.

##### 1.02 RELATED REQUIREMENTS

- A. Section 07 25 00 - Weather Barriers: Sealing frames to water-resistive barrier installed on adjacent construction.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

##### 1.03 REFERENCE STANDARDS

- A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2013.
- B. AMCA 500-L - Laboratory Methods of Testing Louvers for Rating; 2012.
- C. AMCA 511 - Certified Ratings Program for Air Control Devices; 2010.
- D. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- E. FEMA P-361 - Safe Rooms for Tornadoes and Hurricanes: Guidance for Community and Residential Safe Rooms; 2015.
- F. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters; National Storm Shelter Association; 2014.

##### 1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.
- C. Test Reports: Independent agency reports showing compliance with specified performance criteria.

#### PART 2 PRODUCTS

##### 2.01 LOUVERS

- A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified in accordance with AMCA 511.
  - 1. High-Velocity Wind Load Resistance: Design to comply with applicable requirements of ICC 500 and FEMA P-361, including resistance to horizontal debris impact.
  - 2. Intake Louvers; Type 1: Design to allow maximum of 0.01 oz/sq ft water penetration at calculated intake design velocity based on design air flow and actual free area, when tested in accordance with AMCA 500-L.
  - 3. Drainable Blades; Type 1: Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.
  - 4. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.
- B. Stationary Louvers, Type 1: Horizontal blade, extruded aluminum construction, with intermediate mullions matching frame.
  - 1. Free Area: 58.5 percent, minimum.
  - 2. Blades: Straight.
  - 3. Frame: 4 inches deep, channel profile; corner joints mitered and, with continuous recessed caulking channel each side.
  - 4. Products:
    - a. Carnes Company: [www.carnes.com](http://www.carnes.com)
- C. Storm Louvers, Type 2: Inverted "V" blade, hot-rolled steel construction.
  - 1. Free Area: 58.5 percent, minimum.

2. Pressure Drop: 0.15 inches of water gauge maximum per square foot of free area at velocity of 755 fpm, when tested in accordance with AMCA 500-L, test unit size 48 inch by 48 inch.
3. Blades: V-shaped, 3 inch by 3 inch legs, sight-proof.
4. Frame: 8 inches deep, channel profile; corner joints mitered.
  - a. Mounting Flanges: At head/sill and jambs, welded construction.
5. Steel Thickness, Galvanized: Frame 1/4 inch minimum base metal; blades 1/4 inch minimum base metal.
6. Steel Finish: Primed.
7. Products:
  - a. Carnes Company; Model 17171B: [www.carnes.com](http://www.carnes.com)

## **2.02 MATERIALS**

- A. Extruded Aluminum: ASTM B221 (ASTM B221M).
- B. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.

## **2.03 FINISHES**

- A. High Performance Organic Coatings: AAMA 2604; multiple coats, thermally cured fluoropolymer system.
- B. Primer: Zinc chromate, alkyd type.

## **2.04 ACCESSORIES**

- A. Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.
- B. Sealant for Setting Sills and Sill Flashing: Non-curing butyl type.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify that prepared openings and flashings are ready to receive this work and opening dimensions are as indicated on shop drawings.

## **3.02 INSTALLATION**

- A. Install louver assembly in accordance with manufacturer's instructions.
- B. Install louvers level and plumb.
- C. Align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
- D. Secure louver frames in openings with concealed fasteners.

## **3.03 CLEANING**

**END OF SECTION**



**SECTION 09 21 16**  
**GYPSUM BOARD ASSEMBLIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Performance criteria for gypsum board assemblies.
- B. Gypsum wallboard.
- C. Joint treatment and accessories.
- D. Textured finish system.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Building framing.

**1.03 REFERENCE STANDARDS**

- A. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2015.
- B. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2014).
- C. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.
- D. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2014.
- E. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- F. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014a.
- G. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels; 2013.
- H. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2016.
- I. GA-216 - Application and Finishing of Gypsum Board; 2013.
- J. GA-600 - Fire Resistance Design Manual; 2015.
- K. UL (FRD) - Fire Resistance Directory; current edition.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

**PART 2 PRODUCTS**

**2.01 GYPSUM BOARD ASSEMBLIES**

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
  - 1. See PART 3 for finishing requirements.
- B. Fire-Rated Assemblies: Provide completed UL listed assemblies with the following characteristics:
  - 1. Fire-Rated Walls: UL listed assembly No. U305; 1 hour rating.
  - 2. Fire-Rated Walls: UL listed assembly No. U906; 2 hour rating.
  - 3. Fire-Rated Exterior Walls: UL listed assembly No. U356; 1 hour rating
  - 4. Fire-Rated Floor/Ceiling Assemblies: UL listed assembly No. L550; 1 hour rating.
  - 5. Fire-Rated Floor/Ceiling Assemblies: UL listed assembly No. D779; 2 hour rating.
  - 6. Fire-Rated Roof/Ceiling Assemblies: UL listed assembly No. P556; 1 hour rating.
  - 7. Fire-Rated Dwelling Unit Separation Walls: UL listed assembly No. U341; 1 hour rating as indicated on drawings.
  - 8. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).
- C. Fire-Rated Assemblies: Provide completed Gypsum Association listed assemblies with the following characteristics:

1. Fire-Rated Structural Column Framing: GA-600 File Number CM1452; 1 hour rating.
2. Fire-Rated Structural Beam Framing: GA-600 File Number BM1137; 1 hour rating.
3. Fire-Rated Shaft Walls: GA-600 File Number WP6905; 1 hour rating.
4. Fire-Rated Floor/Ceiling Assemblies: GA-600 File Number FC5120; 1 hour rating.
5. Fire-Rated Roof/Ceiling Assemblies: GA-600 File Number RC2601; 1 hour rating.
6. Gypsum Association File Numbers: Comply with requirements of GA-600 for the particular assembly.

D.

## 2.02 BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
  1. American Gypsum Company: [www.americangypsum.com](http://www.americangypsum.com).
  2. CertainTeed Corporation: [www.certainteed.com](http://www.certainteed.com).
  3. Georgia-Pacific Gypsum: [www.gpgypsum.com](http://www.gpgypsum.com).
  4. National Gypsum Company: [www.nationalgypsum.com](http://www.nationalgypsum.com).
  5. USG Corporation: [www.usg.com](http://www.usg.com).
  6. Or approved equal.
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
  1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
  2. Glass mat faced gypsum panels, as defined in ASTM C1658/C1658M, suitable for paint finish of the same core type shall be used in tub/shower alcoves.
  3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
    - a. Mold resistant board is required at all damp locations.
      - 1) Locations include:
        - (a) Shower and tub walls and ceilings.
        - (b) Back and side walls adjacent to Water Closet, to 48 inches above finished floor.
        - (c) Back wall behind Lavatory, to 48 inches above finished floor.
        - (d) Back wall behind Kitchen Sink and Dishwasher, to 48 inches above finished floor.
        - (e) Back wall behind location designated for Laundry appliances, to 48 inches above finished floor.
  4. Thickness:
    - a. Vertical Surfaces: 5/8 inch, or as indicated.
    - b. Ceilings: 5/8 inch.
  5. Paper-Faced Products:
    - a. American Gypsum Company; ClassicRoc Gypsum Wallboard.
    - b. American Gypsum Company; FireBloc Type X Gypsum Wallboard.
    - c. American Gypsum Company; FireBloc Type C Gypsum Wallboard.
    - d. CertainTeed Corporation; Type C Drywall.
    - e. CertainTeed Corporation; Type X Drywall.
    - f. Georgia-Pacific Gypsum; ToughRock.
    - g. Georgia-Pacific Gypsum; ToughRock Fireguard X.
    - h. Georgia-Pacific Gypsum; ToughRock Fireguard C.
    - i. National Gypsum Company; Gold Bond Brand Gypsum Wallboard.
    - j. National Gypsum Company; Gold Bond Brand Fire-Shield Gypsum Board.
    - k. USG Corporation; Sheetrock Brand Gypsum Wallboard.
    - l. USG Corporation; Sheetrock Brand Firecode X.
  6. Mold Resistant Paper Faced Products:
    - a. American Gypsum Company; M-Bloc.
    - b. American Gypsum Company; M-Bloc Type X.
    - c. American Gypsum Company; M-Bloc Type C.
    - d. CertainTeed Corporation; M2Tech 1/2" Moisture & Mold Resistant Drywall.
    - e. CertainTeed Corporation; M2Tech 5/8" Type X Moisture & Mold Resistant Drywall.
    - f. Georgia-Pacific Gypsum; ToughRock Mold-Guard.

- g. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard.
- h. National Gypsum Company; Gold Bond XP Gypsum Board.
- i. USG Corporation; Sheetrock Brand Mold Tough (Firecode X).

## **2.03 GYPSUM BOARD ACCESSORIES**

- A. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.
  - 1. Types: As detailed or required for finished appearance.
  - 2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
  - 3. Products:
    - a. Phillips Manufacturing Co; Metal: [www.phillipsmfg.com](http://www.phillipsmfg.com).
    - b. Stockton Products; Metal: [www.stocktonproducts.com](http://www.stocktonproducts.com).
    - c. Trim-tex, Inc; Metal: [www.trim-tex.com](http://www.trim-tex.com).
- B. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
  - 1. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.
  - 2. Joint Compound: Drying type, vinyl-based, ready-mixed.
- C. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.
- D. Nails for Attachment to Wood Members: ASTM C514.
- E. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that project conditions are appropriate for work of this section to commence.

### **3.02 FRAMING INSTALLATION**

- A. Studs: Space studs as indicated.
  - 1. Extend partition framing to structure in all locations.
- B. Furring for Fire-Resistance Ratings: Install as required for fire-resistance ratings indicated.
- C. Blocking: Install wood blocking for support of:
  - 1. Framed openings.
  - 2. Wall-mounted cabinets.
  - 3. Plumbing fixtures.
  - 4. Toilet accessories.

### **3.03 BOARD INSTALLATION**

- A. Comply with ASTM C840 and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
- B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
  - 1. Exception: Tapered edges to receive joint treatment at right angles to framing.
- C. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
- D. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.
- E. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
  - 1. Single-Layer Applications: Screw attachment.
  - 2. Construct floating internal corners, except where special isolation or edge trim is indicated.

### **3.04 INSTALLATION OF TRIM AND ACCESSORIES**

- A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
  - 1. At building expansion, seismic, or construction joints.
  - 2. Not more than 30 feet apart on walls and ceilings over 50 feet long.
  - 3. At interior ceilings with perimeter relief; not more than 50 feet apart, and area contained within joints not to exceed 2,500 square feet.
    - a. A control joint or intermediate blocking shall be installed where ceiling framing members change direction.
  - 4. At interior ceilings without perimeter relief; not more than 30 feet apart, and area contained within joints not to exceed 900 square feet.
    - a. A control joint or intermediate blocking shall be installed where ceiling framing members change direction.
  - 5. At exterior ceilings; not more than 30 feet apart, and area contained within joints not to exceed 900 square feet.
    - a. A control joint or intermediate blocking shall be installed where ceiling framing members change direction.
- B. Corner Beads: Install at external corners, using longest practical lengths.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

### **3.05 JOINT TREATMENT**

- A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.
- B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
  - 1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
  - 2. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
- C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
  - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
  - 2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

### **3.06 TEXTURE FINISH**

- A. Apply finish texture coating by means of trowel in accordance with manufacturer's instructions.
- B. Texture finish on walls and ceilings: 'Knock-down' texture

### **3.07 TOLERANCES**

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

**END OF SECTION**

**SECTION 09 51 00**  
**ACOUSTICAL CEILINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Suspended metal grid ceiling system.
- B. Acoustical units.

**1.02 REFERENCE STANDARDS**

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- B. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2013a.
- C. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2013.
- D. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2016a.
- E. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2014.
- F. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2014.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- H. CHPS (HPPD) - High Performance Products Database; Current Edition at [www.chps.net/](http://www.chps.net/).
- I. ICC (IBC) - International Building Code; 2015.
- J. UL (GGG) - GREENGUARD Gold Certified Products; current listings at <http://http://productguide.ulenvironment.com/QuickSearch.aspx>.

**1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Indicate grid layout and related dimensioning and mechanical and electrical items installed in the ceiling.
- C. Product Data: Provide data on suspension system components and acoustical units.
- D. Samples: Submit two samples 6 by 6 inch in size illustrating material and finish of acoustical units.
- E. Samples: Submit two samples each, 8 inches long, of suspension system main runner.
- F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
- G. Certification: Manufacturer's certification that products comply with specified requirements, including reports indicating compliance with specified tests and standards. For acoustical performance, each carton of acoustical units must carry an approved laboratory classification of NRC, CAC, and AC.
- H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

**1.05 QUALITY ASSURANCE**

- A. Seismic Design Category; ICC (IBC): Category C; Installation shall conform to ASTM E580/E580M Seismic Design Category C.

## **1.06 FIELD CONDITIONS**

- A. Standard Ceilings: Do not install interior ceilings until space is enclosed, weatherproof, and all wet work in place is completed and nominally dry.
- B. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

## **1.07 WARRANTY**

- A. Provide manufacturer's standard written ten-year limited warranty to repair or replace components due to failure caused defects in material or factory workmanship.

## **PART 2 PRODUCTS**

### **2.01 SYSTEM DESCRIPTION:**

- A. Continuous/Wall to Wall, seismically reinforced.

### **2.02 MANUFACTURERS**

- A. Acoustic Tiles/Panels Basis of Design:
  - 1. CIRRUS #578 manufactured by Armstrong World Industries, Inc.
- B. Manufacturers:
  - 1. Armstrong World Industries, Inc: [www.armstrongceilings.com](http://www.armstrongceilings.com).
  - 2. CertainTeed Corporation: [www.certainteed.com](http://www.certainteed.com).
  - 3. USG Corporation: [www.usg.com/ceilings](http://www.usg.com/ceilings).
  - 4. Or approved equal.
- C. Suspension Systems:
  - 1. Armstrong World Industries, Inc: [www.armstrongceilings.com](http://www.armstrongceilings.com).
  - 2. CertainTeed Corporation: [www.certainteed.com](http://www.certainteed.com).
  - 3. Chicago Metallic/Rockfon, LLC: [www.rockfon.com](http://www.rockfon.com).
  - 4. USG Corporation: [www.usg.com/ceilings](http://www.usg.com/ceilings).

### **2.03 PERFORMANCE REQUIREMENTS**

- A. Fire-Resistance Rating: Determined in accordance with test procedures in ASTM E119 and complying with the following:

### **2.04 ACOUSTICAL UNITS**

- A. Acoustical Units - General: ASTM E1264, Class A.
  - 1. VOC Content: Certified as Low Emission by one of the following:
    - a. Product listing in UL (GGG).
    - b. Product listing in CHPS (HPPD).
  - 2. Fire Classification: Class A in accordance with ASTM E84:
    - a. Flame spread: 25 maximum.
    - b. Smoke generated: 50 maximum.
  - 3. Dimensional Stability: Panels shall remain unaffected by temperatures to 120 degrees F and relative humidity levels of 100 percent.
- B. Acoustical Panels: Painted mineral fiber, with the following characteristics:
  - 1. Classification: ASTM E1264 Type III.
    - a. Form: 2, water felted.
    - b. Pattern: "D" - fissured.
  - 2. Size: 24 by 24 inches.
  - 3. Thickness: 3/4 inch.
  - 4. Light Reflectance: 86 percent, determined in accordance with ASTM E1264.
  - 5. NRC Range: 0.30 to 0.35, determined in accordance with ASTM E1264.
  - 6. Ceiling Attenuation Class (CAC): 35, determined in accordance with ASTM E1264.
  - 7. Panel Edge: Square.
  - 8. Tile Edge: Beveled.
    - a. Joint: Tegral.
  - 9. Color: White.
  - 10. Suspension System: Exposed grid.

## **2.05 SUSPENSION SYSTEM(S)**

- A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
  - 1. Materials:
    - a. Steel Grid: ASTM A653/A653M, G30 coating, unless otherwise indicated.
- B. Exposed Suspension System: Hot-dipped galvanized steel grid and cap.
  - 1. Structural Classification: Intermediate-duty, when tested in accordance with ASTM C635/C635M.
  - 2. Profile: Tee; 15/16 inch face width.
  - 3. Finish: Baked enamel.
  - 4. Color: White.

## **2.06 ACCESSORIES**

- A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
- B. Hanger Wire: 12 gauge, 0.08 inch galvanized steel wire.
- C. Perimeter Moldings: Same material and finish as grid; size and type to suit application, and seismic requirements.
  - 1. Size: As required for installation conditions.
  - 2. Angle Molding: L-shaped, for mounting at same elevation as face of grid.
- D. Touch-up Paint: Type and color to match acoustical and grid units.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify all work above ceilings is complete.
- C. Verify that layout of hangers will not interfere with other work.

### **3.02 INSTALLATION - SUSPENSION SYSTEM**

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
- B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size.
- D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
  - 1. Use longest practical lengths.
  - 2. Overlap and rivet corners.
- E. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.

### **3.03 INSTALLATION - ACOUSTICAL UNITS**

- A. Install acoustical units in accordance with manufacturer's instructions.

- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- E. Cutting Acoustical Units:
  - 1. Cut to fit irregular grid and perimeter edge trim.
  - 2. Make field cut edges of same profile as factory edges.
  - 3. Double cut and field paint exposed reveal edges.
- F. Where round obstructions occur, provide preformed closures to match perimeter molding.
- G. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.

#### **3.04 TOLERANCES**

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

**END OF SECTION**



**SECTION 09 65 00**  
**RESILIENT FLOORING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Resilient tile flooring.
- B. Resilient base.
- C. Resilient stair accessories.
- D. Installation accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.

**1.03 REFERENCE STANDARDS**

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2014c.
- B. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- C. ASTM F1700 - Standard Specification for Solid Vinyl Floor Tile; 2013a.
- D. ASTM F1861 - Standard Specification for Resilient Wall Base; 2008 (Reapproved 2012).
- E. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- F. ASTM F2169 - Standard Specification for Resilient Stair Treads; 2015.
- G. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.
- H. RFCI (FloorScore) - Resilient Floor Covering Institute Indoor Air Quality certification program.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
- C. Selection Samples: Submit manufacturer's complete set of color samples for Architect's initial selection.
- D. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.
- E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. Extra Flooring Material:
    - a. Community Building: Amount equal to 5 percent of each type and color.
    - b. Dwelling Unit Buildings: Amount equal to 10 percent of each type and color for each multi-unit building.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
- B. Store all materials off of the floor in an acclimatized, weather-tight space.
- C. Maintain temperature in storage area between 65 degrees F and 90 degrees F.
- D. Do not double stack pallets.

## **1.06 FIELD CONDITIONS**

- A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature between 65 degrees F and 85 degrees F to achieve temperature stability. Thereafter, maintain conditions above 65 degrees F.

## **PART 2 PRODUCTS**

### **2.01 TILE FLOORING**

- A. Vinyl Plank: Printed film type, with transparent or translucent wear layer, floating or adhered.
  - 1. Manufacturers:
    - a. Mannington Commercial; Nature's Path-Wood: [www.manningtoncommercial.com](http://www.manningtoncommercial.com).
    - b. Metroflor Corporation; Konecto - 'Project Plank': [www.aspectaflooring.com](http://www.aspectaflooring.com).
    - c. Shannon Specialty Floors, Inc; Tuf Stuf Woodland Path: [www.shannonspecialtyfloors.com](http://www.shannonspecialtyfloors.com).
    - d. Or approved equal.
  - 2. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
  - 3. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E648 or NFPA 253.
  - 4. VOC Content Limits: As specified in Section 01 61 16.
  - 5. Plank Tile Size: 6 by 36 inch.
  - 6. Wear Layer Thickness: 0.012 inch.
  - 7. Total Thickness: 0.177 inch.
  - 8. Color: To be selected by Owner from manufacturer's full range.

### **2.02 STAIR COVERING**

- A. Stair Treads: Rubber; full width and depth of stair tread in one piece; tapered thickness.
  - 1. Manufacturers:
    - a. Johnsonite, a Tarkett Company; Angle Fit: [www.johnsonite.com](http://www.johnsonite.com).
    - b. Mannington Commercial; Linear Series: [www.manningtoncommercial.com](http://www.manningtoncommercial.com).
    - c. Or approved equal.
  - 2. Minimum Requirements: Comply with ASTM F2169, Type TP, rubber, thermoset.
  - 3. Nominal Thickness: 0.1875 inch.
  - 4. Nosing: Square.
  - 5. Texture: Smooth.
  - 6. Color: As selected by Owner.
- B. Stair Risers: Full height and width of tread in one piece, matching treads in material and color.
  - 1. Thickness: 0.080 inch.

### **2.03 RESILIENT BASE**

- A. Resilient Base: ASTM F1861, Type TP, rubber, thermoplastic; top set Style B, Cove.
  - 1. Manufacturers:
    - a. Armstrong World Industries, Inc: [www.armstrong.com](http://www.armstrong.com).
    - b. Johnsonite, a Tarkett Company: [www.johnsonite.com](http://www.johnsonite.com).
    - c. Mannington Commercial: [www.manningtoncommercial.com](http://www.manningtoncommercial.com).
    - d. Roppe Corporation: [www.roppe.com](http://www.roppe.com).
  - 2. Critical Radiant Flux (CRF): Minimum 0.45 watt per square centimeter, when tested in accordance with ASTM E648 or NFPA 253.
  - 3. Height: 4 inch.
  - 4. Thickness: 0.125 inch.
  - 5. Finish: Satin.
  - 6. Length: Roll.
  - 7. Color: To be selected by Owner from manufacturer's full range.
  - 8. Accessories: Premolded external corners.

### **2.04 ACCESSORIES**

- A. Subfloor Filler: Fast-setting, portland-cement based; type recommended by adhesive material manufacturer.

- B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
  - 1. VOC Content Limits: As specified in Section 01 61 16.
- C. Moldings, Transition and Edge Strips: Same material as flooring.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
  - 1. Test as Follows:
    - a. Alkalinity (pH): ASTM F710.
    - b. Moisture Vapor Emission: ASTM F1869.
  - 2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

#### **3.02 PREPARATION**

- A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
- B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.
- C. Prohibit traffic until filler is fully cured.
- D. Clean substrate.
- E. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

#### **3.03 INSTALLATION - GENERAL**

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install in accordance with manufacturer's written instructions.
- C. Adhesive-Applied Installation:
  - 1. Spread only enough adhesive to permit installation of materials before initial set.
  - 2. Fit joints and butt seams tightly.
  - 3. Set flooring in place, press with heavy roller to attain full adhesion.
- D. Loose-Laid Installation: Set flooring in place in accordance with manufacturer's instructions.
  - 1. Fit interlocking edges tightly.
- E. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
- F. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
  - 1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
  - 2. Resilient Strips: Attach to substrate using adhesive.
- G. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
- H. Install flooring in recessed floor access covers, maintaining floor pattern.

#### **3.04 INSTALLATION - PLANK FLOORING**

- A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

- B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.
- C. Install plank tile with a random offset of at least 6 inches from adjacent rows.

### **3.05 INSTALLATION - RESILIENT BASE**

- A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
- B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
- C. Install base on solid backing. Bond tightly to wall and floor surfaces.
- D. On irregular wall surfaces (masonry) seal gaps between the top of base and wall surface with plastic filler applied according to the manufacturer's instructions.
- E. Scribe and fit to door frames and other interruptions.

### **3.06 CLEANING**

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's written instructions.

### **3.07 PROTECTION**

- A. Prohibit traffic on resilient flooring for 48 hours after installation.
- B. If construction activities are on-going, provide heavy, undyed, kraft paper protective coverings to prevent damage. Replace as required.

**END OF SECTION**

**SECTION 09 68 16**  
**SHEET CARPETING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Carpet, stretched-in with cushion underlay.
- B. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 03 35 11 - Concrete Floor Finishes: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied carpet.
- C. Section 03 54 00 - Cast Underlayment.
- D. Section 09 65 00 - Resilient Flooring: Coordination of transition strips.

**1.03 REFERENCE STANDARDS**

- A. ASTM D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials; 2016.
- B. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2014c.
- C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.
- D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2011.
- E. CRI (GL) - Green Label Testing Program - Certified Products; Current Edition.
- F. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; 2015.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
- C. Samples: Submit two samples 12 by 12 inch in size illustrating color and pattern for each carpet and cushion material specified.
- D. Manufacturer's Installation Instructions: Indicate special procedures.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet with minimum three years documented experience.

**1.06 FIELD CONDITIONS**

- A. Store materials in area of installation for minimum period of 72 hours prior to installation.
- B. Maintain minimum 70 degrees F ambient temperature 24 hours prior to, during and 24 hours after installation.
- C. Ventilate installation area during installation and for 72 hours after installation.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Carpet:
  - 1. J & J Industries, Inc: [www.jjindustries.com](http://www.jjindustries.com).
  - 2. Milliken & Company: [www.milliken.com](http://www.milliken.com).
  - 3. Mohawk Group: [www.mohawkgroup.com](http://www.mohawkgroup.com).
  - 4. Shaw Industries Group: [www.shawfloors.com](http://www.shawfloors.com).
- B. Cushion:
  - 1. Healthier Choice Flooring, LLC: [www.healthierchoice.com](http://www.healthierchoice.com).

2. Leggett & Platt, Inc: [www.lpurethane.com](http://www.lpurethane.com).
3. Proflex Products, Inc: [www.proflex.us](http://www.proflex.us).

## **2.02 CARPET**

- A. Carpet; FHA Dwelling Units:
  1. Product: Medium Pile; as selected by Owner.
  2. Roll Width: 12 ft.
  3. Face Weight: 18 oz/sq yd.
  4. Dye Method: Solution Dyed.
  5. Fiber Treatment: Soil/Stain Protection and Antimicrobial.
  6. Secondary Backing:
    - a. Material: Classicbac.
  7. Maximum Electrostatic Charge: 3 Kv. at 20 percent relative humidity (RH).
  8. Critical Radiant Flux: Minimum of 0.45 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
  9. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").
  10. VOC Content: Comply with Section 01 61 16.
- B. Owner/Architect shall determine if alternate manufacturer style/colors submitted are equal to basis of specification.
- C. All carpeting shall be back-stamped in accordance with HUD UM Bulletin No. 44d. Certificate of compliance to be given to Owner at project completion.
- D. For each type of carpeting specified; all carpeting shall be from the manufacturer's same dye lot.

## **2.03 CUSHION**

- A. Cushion: Synthetic Fiber; Typical Dwelling Units (omit at Accessible Units).
  1. Product: Syntex manufactured by Leggett & Platt.
  2. Nominal Thickness: 0.275 inch.
  3. Weight: 24 oz/sq yd.
  4. Density: 7 lb/cu ft.
- B. HUD UM Bulletin No.72 compliant. Certificate of compliance to be given to Owner at project completion.

## **2.04 ACCESSORIES**

- A. Subfloor Filler: Type recommended by carpet manufacturer.
- B. Tackless Strip: Carpet gripper, of type recommended by carpet manufacturer to suit application, with attachment devices.
- C. Moldings and Edge Strips: Vinyl, color as selected.
  1. All transitional strips shall comply with the applicable accessibility codes requirements.
- D. Adhesives:
  1. Compatible with materials being adhered; maximum VOC content of 50 g/L; CRI (GL) certified; in lieu of labeled product, independent test report showing compliance is acceptable.
- E. Seam Adhesive: Recommended by carpet manufacturer.
- F. Carpet Adhesive: Recommended by carpet manufacturer; releasable type.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive carpet.
- B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesives to subfloor surfaces.
- C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
  1. Test as Follows:
    - a. Alkalinity (pH): ASTM F710.

- b. Moisture Vapor Emission: ASTM F1869.
- 2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

### **3.02 PREPARATION**

- A. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.
- B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

### **3.03 INSTALLATION - GENERAL**

- A. Starting installation constitutes acceptance of subfloor conditions.
- B. Install carpet and cushion in accordance with manufacturer's instructions.
- C. Verify carpet match before cutting to ensure minimal variation between dye lots.
- D. Lay out carpet and locate seams in accordance with shop drawings.
  - 1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
  - 2. Do not locate seams perpendicular through door openings.
  - 3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
  - 4. Locate change of color or pattern between rooms under door centerline.
  - 5. Provide monolithic color, pattern, and texture match within any one area.
- E. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.

### **3.04 STRETCHED-IN CARPET - FHA DWELLING UNITS**

- A. Install tackless strips with pins facing the wall around entire perimeter, except across door openings. Use edge strip where carpet terminates at other floor coverings.
- B. Space tackless strips slightly less than carpet thickness away from vertical surfaces, but not more than 3/8 inch.
- C. Install cushion in maximum size pieces using spot adhesive to adhere to subfloor.
- D. Lay out cushion so that seams will be perpendicular to, or offset from, minimum 6 inches from carpet seams.
- E. Butt cushion edges together and tape seams.
- F. Trim cushion tight to edge of tackless strip and around projections and contours.
- G. Double cut carpet seams, with accurate pattern match. Make cuts straight, true, and unfrayed. Apply seam adhesive to all cut edges immediately.
- H. Join seams using hot adhesive tape. Form seams straight, not overlapped or peaked, and free of gaps.
- I. Following seaming, hook carpet onto tackless strip at one edge, power stretch, and hook firmly at other edges. Follow manufacturer's recommendations for method and amount of stretch.
- J. Trim carpet neatly at walls and around interruptions. Tuck edges into space between tackless strip and wall.
- K. Complete installation of edge strips, concealing exposed edges.
  - 1. Installation of transitional strips shall not begin until the work of all other trades has been completed, especially overhead trades.

### **3.05 CLEANING**

- A. Remove excess adhesive from floor and wall surfaces without damage.
- B. Install temporary surface protection over carpet material in areas where other construction activities or construction foot traffic are still present and/or where snow, rain, mud, dirt, etc. may be tracked into area from the outside.

- C. After all construction activities are complete, clean and vacuum carpet surfaces of all dirt, debris, stains, and residues per manufacturer's written instructions.

**END OF SECTION**



**SECTION 09 91 13**  
**EXTERIOR PAINTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints.
- C. Materials for backpriming woodwork.
- D. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
  - 1. Factory-primed Entry doors.
  - 2. Exposed surfaces of steel lintels and ledge angles.
  - 3. All surfaces of shop primed steel stairs except concrete treads.
  - 4. Steel Bollards.
  - 5. Mechanical and Electrical:
    - a. Exposed pipe and conduit.
- E. Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
  - 4. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, zinc, and lead.
  - 5. Floors, unless specifically indicated.
  - 6. Brick, glass unit masonry, architectural concrete, cast stone, integrally colored plaster and stucco.
  - 7. Glass.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 05 50 00 - Metal Fabrications: Final coating of shop-primed items.
- C. Section 05 51 00 - Metal Stairs: Final coating of shop-primed items.
- D. Section 06 20 00 - Finish Carpentry.
- E. Section 07 46 46 - Fiber-Cement Siding.
- F. Section 09 91 23 - Interior Painting.

**1.03 REFERENCE STANDARDS**

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2015.
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, [www.paintinfo.com](http://www.paintinfo.com).
- D. SSPC-SP 1 - Solvent Cleaning; 2015.
- E. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
- F. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").

2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
  3. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures.

#### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.
  1. All materials used on the work shall be stored in a single place designated by the Owner/Architect and shall be kept clean and orderly at all times.
  2. Care shall be taken to prevent damage to the storage area, and any damage incurred shall be repaired.

#### **1.07 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
  1. If a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
- B. Paints:
  1. Behr Process Corporation: [www.behr.com/#sle](http://www.behr.com/#sle).
  2. Benjamin Moore Paints: [www.benjaminmoore.com](http://www.benjaminmoore.com).
  3. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
  4. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).

#### **2.02 PAINTS AND FINISHES - GENERAL**

- A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
  1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
  3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.

4. Supply each paint material in quantity required to complete entire project's work from a single production run.
  5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.
- C. Colors: To be selected from manufacturer's full range of available colors.
1. Selections to be made by Owner.

### **2.03 PAINT SYSTEMS - EXTERIOR**

- A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete masonry units, fiber cement siding, engineered wood siding, primed wood, and primed urethane decorative elements.
1. Two top coats and one coat primer.
  2. Top Coat(s): Exterior Latex.
  3. Top Coat Sheen:
    - a. Flat: MPI gloss level 1; use this sheen for overhead surfaces.
    - b. Satin: MPI gloss level 4; use this sheen at all locations.
- B. Paint ME-OP-3A - Ferrous Metals, Unprimed, Alkyd, 3 Coat:
1. One coat of alkyd, water based primer.
  2. Semi-gloss: Two coats of alkyd, water based, enamel.
- C. Paint ME-OP-2A - Ferrous Metals, Primed, Alkyd, Water Based, 3 Coat:
1. Applications include factory-primed entry doors, steel stairs, handrails, guardrails, and bollards.
  2. One coat of alkyd, water based primer.
    - a. Entry doors: Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
  3. Semi-gloss: Two coats of water based alkyd enamel.
- D. Paint MgE-OP-3A - Galvanized Metals, Alkyd, 3 Coat:
1. Applications include galvanized metal fabrications, flashing, and trim.
  2. One coat galvanize primer.
  3. Semi-gloss: Two coats of alkyd, water based, enamel.

### **2.04 PRIMERS**

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Interior/Exterior Latex Block Filler.
  2. Rust-Inhibitive Water Based Primer; MPI #107.
  3. Latex Primer for Exterior Wood; MPI #6.

### **2.05 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:

1. Fiber Cement Siding: 12 percent.
2. Engineered Wood Siding: 12 percent.
3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- D. Seal surfaces that might cause bleed through or staining of topcoat.
- E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- F. Masonry:
  1. Prepare surface as recommended by top coat manufacturer.
  2. Clean surfaces with pressurized water. Use pressure range of 600 to 1,500 psi at 6 to 12 inches. Allow to dry.
- G. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- H. Engineered Wood Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- I. Galvanized Surfaces:
  1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
  2. Prepare surface according to SSPC-SP 2.
- J. Ferrous Metal:
  1. Solvent clean according to SSPC-SP 1.
  2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
  3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
- K. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied. Back prime concealed surfaces before installation.
- L. Metal Entry Doors to be Painted: Shop-Primed Surfaces; Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces

### **3.03 APPLICATION**

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.
- C. Exterior steel stairs: Paint sides of stringers, landings, and other components adjacent to building construction, or that otherwise would be inaccessible after installation, prior to erection.
- D. Apply products in accordance with manufacturer's written instructions.
- E. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- F. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

- G. Apply each coat to uniform appearance.
- H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

#### **3.04 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Upon completion of the work, the Contractor shall remove all paint spots from all decks, patios, glass, and adjacent surfaces.

#### **3.05 PROTECTION**

- A. Protect finishes until completion of project.
- B. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**



**SECTION 09 91 23**  
**INTERIOR PAINTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints.
- C. Materials for backpriming woodwork.
- D. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
  - 1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.
  - 2. Both sides and all edges of interior wood doors.
  - 3. Mechanical and Electrical:
    - a. Paint interior surfaces of air ducts that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.
- E. Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
  - 4. Floors, unless specifically indicated.
  - 5. Ceramic and other tiles.
  - 6. Glass.
  - 7. Concealed pipes, ducts, and conduits.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 05 50 00 - Metal Fabrications: Shop-primed items.
- C. Section 06 20 00 - Finish Carpentry.
- D. Section 09 21 16 - Gypsum Board Assemblies.
- E. Section 09 91 13 - Exterior Painting.

**1.03 REFERENCE STANDARDS**

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2015.
- C. SSPC-SP 1 - Solvent Cleaning; 2015.
- D. SSPC-SP 6 - Commercial Blast Cleaning; 2007.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
  - 2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
  - 3. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Certification: By manufacturer that paints and finishes comply with VOC limits specified.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures.

### **1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
- B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 3 years experience.

### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.
  - 1. All materials used on the work shall be stored in a single place designated by the Owner/Architect and shall be kept clean and orderly at all times.
  - 2. Care shall be taken to prevent damage to the storage area, and any damage incurred shall be repaired.

### **1.07 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.
- D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
  - 1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for submittals.
- B. Paints:
  - 1. Behr Process Corporation: [www.behr.com/#sle](http://www.behr.com/#sle).
  - 2. Benjamin Moore Paints: [www.benjaminmoore.com](http://www.benjaminmoore.com).
  - 3. Diamond Vogel Paints: [www.diamondvogel.com/#sle](http://www.diamondvogel.com/#sle).
  - 4. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
  - 5. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).

### **2.02 PAINTS AND FINISHES - GENERAL**

- A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
  - 1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  - 2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
  - 3. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.
  - 4. Supply each paint material in quantity required to complete entire project's work from a single production run.
  - 5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.



- B. Volatile Organic Compound (VOC) Content: Comply with Section 01 61 16.
- C. Colors: To be selected from manufacturer's full range of available colors.
  - 1. Selection to be made by Owner.
  - 2. Extend colors to surface edges; colors may change at any edge as directed by Architect or Owner.
  - 3. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

## **2.03 PAINT SYSTEMS - INTERIOR**

- A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, wood, uncoated steel, and shop primed steel.
  - 1. Two top coats and one coat primer.
  - 2. Top Coat(s): Interior Latex.
  - 3. Top Coat Sheen:
    - a. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
    - b. Eggshell: MPI gloss level 3; use this sheen at all locations.
  - 4. Primer: As recommended by top coat manufacturer for specific substrate.
- B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
  - 1. Medium duty applications include doors, door frames, window sills and casing, and wood baseboards.
  - 2. Two top coats and one coat primer.
  - 3. Top Coat(s): Interior Alkyd, Water Based.
  - 4. Top Coat Sheen:
    - a. Eggshell: MPI gloss level 3; use this sheen at all locations except doors.
    - b. Semi-Gloss: MPI gloss level 5; use this sheen at door edges and faces.
  - 5. Primer: As recommended by top coat manufacturer for specific substrate.

## **2.04 PRIMERS**

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
  - 1. Interior Latex Primer Sealer.
  - 2. Latex Primer for Interior Wood.

## **2.05 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
- B. Patching Material: Latex filler.
- C. Fastener Head Cover Material: Latex filler.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Do not begin application of paints and finishes until substrates have been adequately prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
  - 1. Gypsum Wallboard: 12 percent.
  - 2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
  - 3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.

### **3.02 PREPARATION**

- A. Clean surfaces thoroughly and correct defects prior to application.

1. Clean floors and all adjacent surfaces prior to application.
- B. Mask or otherwise protect floors, adjacent walls, fixtures, and other construction throughout application.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Masonry:
  1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
  2. Prepare surface as recommended by top coat manufacturer.
- H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
- I. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
- J. Ferrous Metal:
  1. Solvent clean according to SSPC-SP 1.
  2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
  3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
- K. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
- L. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

### **3.03 APPLICATION**

- A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
- B. Apply products in accordance with manufacturer's written instructions.
- C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
- D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
- F. Sand wood and metal surfaces lightly between coats to achieve required finish.
- G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
- H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

### **3.04 CLEANING**

- A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.
- B. Upon completion of the work, the Contractor shall remove all paint spots from the floors, glass and adjacent surfaces.

### **3.05 PROTECTION**

- A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**



## **SECTION 10 14 00**

### **SIGNAGE**

#### **PART 1 GENERAL**

##### **1.01 SECTION INCLUDES**

- A. Room and door signs.
- B. Building Identification signs.
- C. Dwelling Unit identification signs.
- D. Monument Sign.
- E. Traffic signs.

##### **1.02 RELATED REQUIREMENTS**

- A. Section 07 46 46 - Fiber-Cement Siding.

##### **1.03 REFERENCE STANDARDS**

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2009.
- D. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.

##### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
  - 1. Submit for approval by Owner through Architect prior to fabrication.
- D. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- E. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

##### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Package signs as required to prevent damage before installation.
- B. Package room and door signs in sequential order of installation, labeled by floor or building.
- C. Store tape adhesive at normal room temperature.

##### **1.06 FIELD CONDITIONS**

- A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
- B. Maintain this minimum temperature during and after installation of signs.

#### **PART 2 PRODUCTS**

##### **2.01 MANUFACTURERS**

- A. Flat Signs:
  - 1. Best Sign Systems, Inc; HC300: [www.bestsigns.com](http://www.bestsigns.com).
  - 2. Cosco Industries (ADA signs); ADA Series 2: [www.coscoarchitecturalsigns.com](http://www.coscoarchitecturalsigns.com).
  - 3. Inpro; Aspen Series: [www.inprocorp.com](http://www.inprocorp.com).
  - 4. Mohawk Sign Systems, Inc; Mohawk 1000 Sand Carved: [www.mohawksign.com](http://www.mohawksign.com).
  - 5. National Signage Affiliates; PoliTouch Series: [www.nationalsignageaffiliates.com](http://www.nationalsignageaffiliates.com).
  - 6. Stamprite Supersine, Inc.; Supersine TFA: [www.supersine.com](http://www.supersine.com)
- B. Dimensional Letter & Numbers:

1. Cosco Industries; Injection Molded Acrylic: [www.coscoarchitecturalsigns.com/#sle](http://www.coscoarchitecturalsigns.com/#sle).
  2. Or approved Equal.
- C. Dwelling Unit Identification Signs:
1. Best Sign Systems, Inc; Graphic Blast FG: [www.bestsigns.com](http://www.bestsigns.com).
  2. Inpro; Photopolymer: [www.inprocorp.com](http://www.inprocorp.com).
  3. Mohawk Sign Systems, Inc; Series 200A : [www.mohawksign.com](http://www.mohawksign.com).
  4. Stamprite Supersine, Inc.; Supersine PPA: [www.supersine.com](http://www.supersine.com)

## 2.02 SIGNAGE APPLICATIONS

- A. Accessibility Compliance: Signs are required to comply with, UFAS, ADA Standards, and ICC A117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
- B. Room and Door Signs: Provide signs as indicated in Signage Schedule.
1. Sign Type: Flat signs with raised panel media as specified.
  2. Provide "tactile" signage, with letters raised minimum 1/32 inch and Grade II braille.
  3. Character Height: 5/8 inch.
  4. Sign Size: As required to accommodate required graphics and text.
    - a. Maintain consistent size throughout building.
  5. Room Doors: Identify with room names as scheduled.
  6. Public Toilet Room(s): Identify with pictograms, "MEN" and "WOMEN", International accessibility symbol, and braille.
- C. Egress Door Sign, Community Building:
1. Sign Type: Printed vinyl self-adhesive, UV stable, chemical, abrasion, and moisture resistant.
  2. Sign size: 2 by 24 inches, unless otherwise indicated.
  3. Text Height: 1 inch minimum on contrasting background.
  4. Message: "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED".
- D. Occupant Load Sign, Community Building: Shall be as required by the Local Fire Marshal, or Local Authority having Jurisdiction.
- E. Building Identification Signs:
1. Sign Type: Dimensional Letters and Numbers, 4 inch high minimum; wall-mounted.
  2. Material: plastic letters & numbers.
  3. Install at building exteriors as directed by Owner
- F. Dwelling Unit Identification Signs:
1. Sign Type: Flat signs with raised panel media as specified.
  2. Material: Fiberglass or Photopolymer signs.
  3. Mounting: Countersunk Screws.
  4. Install on outside wall at apartment entries as directed or indicated on drawings.
- G. Office Directional Sign:
1. Sign Type: Flat signs with printed panel media as specified.
  2. Material: Fiberglass or Photopolymer signs.
  3. Size: 24 inch by 36 inch.
  4. Mounting: Pole- mounted.
  5. Text: 'OFFICE' with directional arrow (direction of arrow per Owner)
- H. Monument Sign: Provide sign as indicated on Drawings.
- I. Traffic Signs: Provide Parking/Traffic signs and mounting poles of types indicated on drawings.

## 2.03 SIGN TYPES

- A. Flat Signs: Signage media without frame.
1. Edges: Square.
  2. Corners: Square.
  3. Wall Mounting of Interior One-Sided Signs: Tape adhesive or silicone adhesive.
  4. Wall Mounting of Exterior One-Sided Signs: Countersunk screws.
- B. Color and Font: Unless otherwise indicated:

1. Character Font: Helvetica, Arial, or other sans serif font.
2. Character Case: Upper case only.
3. Background Color: Selected by Owner/Architect.
4. Character Color: Contrasting color.

#### **2.04 TACTILE SIGNAGE MEDIA**

- A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:
  1. Total Thickness: 1/8 inch.
- B. Injection Molded Panels: One-piece acrylic plastic, with raised letters and braille.
  1. Total Thickness: 1/8 inch.
- C. Applied Character Panels: Acrylic plastic base, with applied acrylic plastic letters and braille.
  1. Total Thickness: 1/8 inch.
  2. Letter Thickness: 3/32 inch.
  3. Letter Edges: Square.

#### **2.05 NON-TACTILE SIGNAGE MEDIA**

- A. Sand Blasted Plastic Panels: High gloss acrylic plastic; letters sand blasted to dull sheen:
  1. Total Thickness: 1/8 inch.

#### **2.06 ACCESSORIES**

- A. Exposed Screws: Chrome plated.
- B. Tape Adhesive: Double sided tape, permanent adhesive.
- C. Silicone Adhesive: Type as recommended by manufacturer.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

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

#### **3.02 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Protect from damage until Date of Substantial Completion; repair or replace damaged items.

## PART 4 SCHEDULES

### 4.01 FLAT AND TACTILE SIGNAGE SCHEDULE

DESCRIPTION/TEXT	LOCATION	QUANTITY
<b>DIMENSIONAL LETTER SIGNS</b>		
Building Number/Address	Exterior	1 per Bldg
<b>FLAT SIGNS</b>		
Office Directional Sign	Interior	1
Dwelling Unit Directional Signs	Interior	1 per Stairway
<b>TACTILE SIGNS</b>		
Dwelling Unit Number	Interior	1 per Unit
Stairs (outside stairway)	Interior	2 per Floor
Ground Floor (inside stairway)	Interior	2 per Floor
Floor No. 'X' (inside stairway at ea lvl above ground floor)	Interior	2 per Floor
Trash Room	Interior	2 per Floor
Office	Interior	1
Fitness Room	Interior	1
Storm Shelter	Interior	1
Mechanical Room	Interior	1
Maintenance	Interior	3
Men (with international accessibility symbol)	Interior	1
Women (with international accessibility symbol)	Interior	1
Storage	Interior	1
Library	Interior	1
TV Lounge	Interior	2
Storm Shelter	Exterior	1
Trash	Exterior	2

END OF SECTION



**SECTION 10 28 00**  
**TOILET AND BATH ACCESSORIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Accessories for Dwelling Unit Bathrooms and Public Toilet Rooms.
- B. Grab bars.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Concealed supports for toilet and bathroom accessories, including in wall framing and plates.

**1.03 REFERENCE STANDARDS**

- A. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2015a.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- C. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- D. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium; 2011.
- E. ASTM C1036 - Standard Specification for Flat Glass; 2011.
- F. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror; 2008 (Reapproved 2013).

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Fixture and Accessory Manufacturers::
  - 1. Better Homes Products, Inc.: [www.betterhomesproducts.com](http://www.betterhomesproducts.com).
  - 2. Pfister, a Spectrum Brands company: [www.pfisterfaucets.com](http://www.pfisterfaucets.com).
  - 3. Delta Faucet Company, Inc.: [www.deltafaucet.com](http://www.deltafaucet.com).
- B. Commercial Toilet and Shower Accessories:
  - 1. ASI - American Specialties, Inc: [www.americanspecialties.com](http://www.americanspecialties.com).
  - 2. Bradley Corporation: [www.bradleycorp.com](http://www.bradleycorp.com).
  - 3. Bobrick Washroom Equipment Inc.: [www.bobrick.com](http://www.bobrick.com).
- C. Provide products of each category type by single manufacturer.

**2.02 MATERIALS**

- A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
- B. Keys: Provide 2 keys for each accessory to Owner.
- C. Stainless Steel Sheet: ASTM A666, Type 304.
- D. Stainless Steel Tubing: ASTM A269/A269M, Type 304.
- E. Galvanized Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating.
- F. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
- G. Adhesive: silicone, waterproof.

- H. Fasteners, screws, and bolts: Corrosion resistant or stainless steel.

## **2.03 FINISHES**

- A. Stainless Steel: Satin finish, unless otherwise noted.
- B. Chrome/Nickel Plating: ASTM B456, SC 2, satin finish, unless otherwise noted.
- C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.
- D. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.

## **2.04 TOILET AND BATHROOM ACCESSORIES**

- A. Toilet Paper Dispenser: Single roll, surface mounted bracket type, nickel-plated solid brass.
  - 1. Product: Candlestick Park #2209 manufactured by Better Homes Products, or equal.
- B. Paper Towel Dispenser: Folded paper type, stainless steel, surface-mounted, with viewing slots on sides as refill indicator and tumbler lock.
  - 1. Capacity: 400 multifold minimum.
  - 2. Product: Model # B262 manufactured by Bobrick, or equal.
- C. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
  - 1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
  - 2. Size: As indicated on drawings.
  - 3. Frame: 0.04 inch channel shapes, with mitered and welded and ground corners; satin finish.
  - 4. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
- D. Grab Bars: Stainless steel, textured surface.
  - 1. Standard Duty Grab Bars:
    - a. Push/Pull Point Load: 250 pound-force, minimum.
    - b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, concealed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
    - c. Finish: Safety-grip.
    - d. Length and Configuration: As indicated on the Drawings.
    - e. Product: Series 832 manufactured by Bradley, or equal.
- E. Shower Curtain Rod: Stainless steel tube, 1 inch outside diameter, 0.04 inch wall thickness, satin-finished, with 3 inch outside diameter, minimum 0.04 inch thick satin-finished stainless steel flanges, for concealed mounting.
  - 1. Product: Model B-207 manufactured by Bobrick, or equal.
- F. Towel Bar: Solid brass, nickel-plated.
  - 1. Finish: Satin.
  - 2. Length: 24 inches.
  - 3. Product: Candlestick Park #2224 manufactured by Better Homes Products, or equal.
- G. Robe Hook: Solid brass, nickel-plated, double-prong for concealed attachment.
  - 1. Finish: Satin.
  - 2. Product: Candlestick Park #2202 manufactured by Better Homes Products, or equal.
- H. Under-Counter Pipe and Drain Covers
  - 1. Specified in 22 00 00 - Plumbing.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. Verify that field measurements are as indicated on drawings.
- D. See Section 06 10 00 - Rough Carpentry for installation of blocking, reinforcing plates, and concealed anchors in walls and ceilings.

### 3.02 PREPARATION

- A. Provide templates and rough-in measurements as required.

### 3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
1. Towel bars and shower curtain rods shall be secured to solid blocking or studs.
  2. Grab bars shall be secured to solid blocking capable of withstanding a 250 pound-force of 5 minute duration.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
1. Grab Bars: As indicated on drawings.
  2. Mirrors: 40 inch, measured from floor to bottom of mirrored surface.
  3. Robe Hooks:
    - a. Typical locations: 60 inches measured to top of hook.
    - b. Accessible locations: 48 inches measured to top of hook.
  4. Other Accessories: As indicated on drawings.

### 3.04 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

## PART 4 ACCESSORY SCHEDULES

### 4.01 PUBLIC TOILET ROOMS

Qty	Description	Model #	Mfr
1	Toilet Paper Holder; surface-mounted	#2209	BHP
1	Paper Towel Dispenser; surface-mounted	#B262	Bobrick
1	Mirror; size as indicated	----	----
1	Grab Bar; 42 inch	BR832-00142	Bradley
1	Grab Bar; 36 inch	BR832-00136	Bradley
1	Grab Bar; 18 inch	BR832-00118	Bradley
1	Coat Hook; door-mounted, typical height	#2202	BHP

### 4.02 TYPICAL DWELLING UNIT BATHROOMS

Qty	Description	Model #	Mfr
1	Toilet Paper Holder; surface-mounted	#2209	BHP
1	Mirror; size as indicated	---	---
1	Shower Curtain Rod	B-207	Bobrick
1	Towel Bar; 24 inch	#2224	BHP
1	Robe Hook, typical height	#2202	BHP

### 4.03 ACCESSIBLE DWELLING UNIT BATHROOMS

- A. In addition to Items in 4.02 above, include the following:

Qty	Description	Model #	Mfr
1	Grab Bar; 42 inch (toilet)	BR832-00142	Bradley
1	Grab Bar; 36 inch (toilet)	BR832-00136	Bradley
3-piece grab bar in prefabricated shower enclosure to be factory-installed			
1	Robe Hook; accessible height	#2202	BHP

**END OF SECTION**



**SECTION 10 44 00**  
**FIRE PROTECTION SPECIALTIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fire extinguishers.
- B. Fire extinguisher cabinets.
- C. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Wood blocking requirements.
- B. Section 09 21 16 - Gypsum Board Assemblies.
- C. Section 09 91 23 - Interior Painting.
- D. Section 11 30 13 - Residential Appliances

**1.03 REFERENCE STANDARDS**

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2013a.
- B. NFPA 10 - Standard for Portable Fire Extinguishers; 2013.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide extinguisher operational features, extinguisher ratings and classifications, color and finish, and anchorage details.
- C. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Fire Extinguishers:
  - 1. Kidde, a unit of United Technologies Corp: [www.kidde.com](http://www.kidde.com).
  - 2. Nystrom, Inc: [www.nystrom.com/sle](http://www.nystrom.com/sle).
  - 3. Pyro-Chem, a Tyco Business: [www.pyrochem.com](http://www.pyrochem.com).
  - 4. Strike First Corporation of America: [www.strikefirstusa.com](http://www.strikefirstusa.com).
- B. Fire Extinguisher Cabinets and Accessories:
  - 1. JL Industries, Inc; Ambassador 1016F10-FX2: [www.jlindustries.com](http://www.jlindustries.com).
  - 2. Larsen's Manufacturing Co; Model FS 2409-5R: [www.larsensmfg.com](http://www.larsensmfg.com).
  - 3. Potter-Roemer; Model 7360: [www.potterroemer.com](http://www.potterroemer.com).

**2.02 FIRE EXTINGUISHERS**

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
  - 1. Stored Pressure Operated: Deep Drawn.
  - 2. Class: A:B:C type.
  - 3. Size: 10 pound; For installation in Common areas.
  - 4. Size: 2.5 pound; For installation in individual Dwelling Units.
  - 5. Finish: Baked polyester powder coat, Red color.
  - 6. Temperature range: Minus 40 degrees F to 120 degrees F.

**2.03 FIRE EXTINGUISHER CABINETS**

- A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire resistance rating of walls where being installed.
- B. Fire Rated Cabinet Construction: hour-rating as required for assembly.
  - 1. Steel; double wall or outer and inner boxes with 5/8 inch thick fire barrier material.

- C. Cabinet Configuration: Semi-recessed type.
  - 1. Exterior nominal dimensions of 14 inch wide by 27 inch high by 4 inch deep.
  - 2. Trim: Flat, with 3/8 inch wide face.
- D. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, full view bubble shape and set in resilient channel glazing gasket.
- E. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.
- F. Finish of Cabinet Exterior Trim and Door: No.4 - Brushed stainless steel.
- G. Finish of Cabinet Interior: White colored enamel.

## **2.04 ACCESSORIES**

- A. Extinguisher Brackets: Formed steel, chrome-plated, by extinguisher manufacturer.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

### **3.02 PREINSTALLATION COORDINATION**

- A. Contractor shall be responsible, during the rough framing stage, to coordinate a site visit with the Local Authority having Jurisdiction, to verify the required locations of all fire extinguisher cabinets to ensure installation of all necessary blocking.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install brackets plumb and level.
- C. Secure rigidly in place.
- D. Install Common Area extinguishers in fire extinguisher cabinets.
  - 1. Provide Multi-Purpose Dry Chemical extinguishers in Office, Community Room, and Maintenance Rooms
  - 2. Install cabinets where indicated or otherwise directed with handle of extinguisher 48 inches above finished floor, maximum.
- E. Install Dwelling Unit fire extinguishers in brackets, where indicated or otherwise directed.
  - 1. Extinguisher brackets in Accessible Dwelling Units shall be mounted in conspicuous, accessible locations and with bottom of extinguisher 27 inches above finished floor, maximum.

**END OF SECTION**

**SECTION 10 55 00**  
**POSTAL SPECIALTIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Central mail delivery boxes.

**1.02 RELATED REQUIREMENTS**

**1.03 REFERENCE STANDARDS**

- A. 39 CFR 111 - U.S. Postal Service Standard 4C; effective date September 3, 2006.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's specifications and descriptive literature, installation instructions, maintenance information, and current USPS approval documentation.
- C. Shop Drawings: Indicate plans for each unit or groups of units, front elevations with compartment layout and model number, overall dimensions, rough-in opening sizes, construction and anchorage details.

**1.05 WARRANTY**

- A. Provide manufacturer's warranty against defects in materials or workmanship for a period of 5 years from Date of Substantial Completion.

**PART 2 PRODUCTS**

**2.01 CENTRAL MAIL DELIVERY BOXES**

- A. Manufacturers:
  - 1. Florence Manufacturing Company: [www.florencemailboxes.com](http://www.florencemailboxes.com).
  - 2. Salsbury Industries: [www.mailboxes.com](http://www.mailboxes.com).
- B. Central Mail Delivery Boxes: Provide products approved for United States Postal Service (USPS) delivery.
  - 1. Materials: Aluminum with stainless steel hardware.
  - 2. Finish: Powder coat in color selected by Owner from manufacturer's standard colors.
  - 3. Unit Types and Sizes: As specified.
  - 4. Configurations: Refer to Drawings for quantity of units and locations.
    - a. Provide a minimum of one (1) customer compartment for each Dwelling Unit and the Manager's office.
- C. Wall-Mounted Mailboxes: Complying with 39 CFR 111 (USPS-STD-4C).
  - 1. Unit A: Front-loading with pair of master doors, double-column design, 9 customer compartments, 1 outgoing mail compartment, and 2 parcel compartments.
    - a. Florence Manufacturing Company; Model 4CADD-09.
    - b. Quantity: 5 Units.
  - 2. Unit A: Front-loading with pair of master doors, double-column design, 9 customer compartments, 1 outgoing mail compartment, and 2 parcel compartments; free-standing enclosure mounted.
    - a. Florence Manufacturing Company; Model # 4CADD-09-D.
    - b. Quantity: 1 Unit.

**2.02 COMPONENTS**

- A. Locking - Front Loading Master Door: Three-point latching mechanism with USPS master lock furnished and installed by postmaster.
- B. Locking - Customer Compartment Doors: USPS approved cam lock, 3 keys each lock.
- C. Locking - Parcel Compartment Doors: Double-lock arrangement with USPS approved cam lock for customer access, and USPS master lock furnished and installed by postmaster.
- D. Identification - Customer and Parcel Compartments: Sequential numerical or alphabetic characters, top to bottom, left to right; factory-installed.

1. Silver adhesive decals, 3/4 inch high black characters centered on 1-1/2 inch high by 1-3/4 inch long decal.
2. Customer Name Marking: Self-adhesive labels; attach below front of each compartment shelf.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Coordinate location of postal specialties with local USPS District authority.
  1. Specified postal specialties require local USPS approval prior to installation.
- B. Verify that concrete base and anchor bolts are ready to receive pedestal-mounted units.
- C. Verify that rough-openings are ready to receive wall-mounted units.
- D. Do not begin installation until unacceptable conditions are corrected.

#### **3.02 INSTALLATION**

- A. Install postal specialties in accordance with approved shop drawings, manufacturer's instructions, and USPS requirements.
- B. Adjust and lubricate door hardware to operate properly.

**END OF SECTION**



**SECTION 10 57 23**  
**CLOSET AND UTILITY SHELVING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Wall mounted wire closet shelving.
- B. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Blocking in walls for attachment of shelving or storage system.

**1.03 SUBMITTALS**

- A. Product Data: Manufacturer's data sheets on each product to be used, with installation instructions.

**1.04 QUALITY ASSURANCE**

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

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Store products under cover and elevated above grade.
- C. Store flat to prevent warpage and bending.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Wire Storage Shelving:
  - 1. ClosetMaid Corporation : [www.closetmaid.com](http://www.closetmaid.com).
  - 2. Rubbermaid, Inc; Wire Closets: [www.rubbermaidpro.com](http://www.rubbermaidpro.com).

**2.02 WIRE STORAGE SHELVING SYSTEMS**

- A. Applications:
  - 1. Shelf Depth: 12 inches, unless otherwise indicated.
  - 2. Bedroom Closets:
    - a. Wall-to-wall shelf with free sliding hanger rod.
    - b. Provide intermediate bracing for shelves longer than 36 inches.
  - 3. Coat Closets:
    - a. Wall-to-wall shelf with integral hanger rod.
    - b. Provide intermediate bracing for shelves longer than 36 inches.
  - 4. Linen and Pantry Shelving:
    - a. Wall-to-wall shelves spaced as shown on the drawings, not less than 16 inch deep.
  - 5. Storage Closets:
    - a. Wall-to-wall storage shelves, close-mesh cross wire spacing, stacked at 12 inch vertically, not less than 16 inch deep.
- B. Wire Shelving: Factory-assembled coated wire mesh shelf assemblies for wall-mounting, with components and connections required to produce a rigid structure that is free of buckling and warping.
  - 1. Construction: Cold-drawn steel wire with average tensile strength of 100,000 psi resistance welded into uniform mesh units, square, rigid, flat, and free of dents or other distortions, with wires trimmed smooth.
  - 2. Coating: PVC or epoxy, applied after fabrication, covering surfaces.
  - 3. PVC Coating: 9 to 11 mils thick.
  - 4. Epoxy Coating: Nontoxic epoxy-polyester powder coating baked-on finish, 3 to 5 mils thick.
  - 5. Standard Mesh Shelves: Cross deck wires spaced at 1 inch.
  - 6. Close-Mesh Shelves: Cross deck wires spaced at 1/2 inch.
  - 7. Shelf and Rod Units: Integral hanging rod at front edge of shelf.

- 8. Free-Sliding Hanging Rod: Integral hanging rod that permits uninterrupted sliding of hangers the full width of the shelf.
- C. Hanging Rod: Tubular steel, 1 inch diameter, with end caps on open ends.
  - 1. Finish: Epoxy powder coat.
  - 2. Wall Thickness: 20 gauge, 0.035 inch.
- D. Wall-Mounted Standards for Wire Shelving: Vertically slotted channel standards with double-tab cantilever brackets to suit shelving; factory finished to match shelving.
- E. Mounting Hardware for Wire Shelving: Provide manufacturer's standard mounting hardware; include support braces, wall brackets, back clips, end clips, poles, and other accessories as required for complete and secure installation; factory finished to match shelving.
- F. Fasteners: As recommended by manufacturer for mounting substrates.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Inspect areas to receive shelving or storage system, to verify that spaces are properly prepared to receive shelf units, and are of dimensions indicated on shop drawings.
- B. Verify appropriate fastening hardware.
- C. Do not begin installation until substrates have been properly prepared.
- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### **3.02 PREPARATION**

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

### **3.03 INSTALLATION**

- A. Install wire shelving in accordance with manufacturer's instructions, with shelf surfaces level.
- B. Cap exposed ends of cut wires and hanging rods.
- C. Install back clips, end clips at side walls, and support braces at open ends. Install intermediate support braces at 32 inches on center, maximum, or as recommended by manufacturer.
- D. Mounting Heights:
  - 1. Single Hanging Rod Units:
    - a. Typical Dwelling Units Install shelf at 68 inches above floor.
    - b. Accessible Dwelling Unit(s) install shelf at 48 inches maximum above floor.

### **3.04 CLEANING**

- A. Clean soiled surfaces after installation.

### **3.05 PROTECTION**

- A. Protect installed work from damage.
- B. Touch-up, repair, or replace damaged products before Substantial Completion in a manner that eliminates evidence of replacement.

## **END OF SECTION**

**SECTION 11 30 13**  
**RESIDENTIAL APPLIANCES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Kitchen appliances.

**1.02 RELATED REQUIREMENTS**

- A. Section 12 35 30 - Residential Cabinets and Countertops: Installation of appliances in casework.
- B. Section 22 00 00 - Plumbing: Plumbing connections for appliances.

**1.03 REFERENCE STANDARDS**

- A. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.
- C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

**1.05 QUALITY ASSURANCE**

- A. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

**1.06 SERVICE AGREEMENT**

- A. Provide one (1) year service contract on all appliances with qualified local area dealer or bona fide repair service, regardless of where purchased.

**PART 2 PRODUCTS**

**2.01 KITCHEN APPLIANCES**

- A. Energy Star Rating: Provide Equipment Eligible for Energy Star Rating where available and applicable.
- B. Refrigerator, Accessible Dwelling Units: Free-standing, top-mounted freezer, and frost-free.
  - 1. Capacity: Total minimum storage of 17.0 cubic ft; minimum 25 percent freezer capacity.
  - 2. Energy Usage: Energy Star Rated.
  - 3. Features: Include glass shelves, automatic icemaker, light in freezer compartment, and ADA compliant front-mounted controls.
  - 4. Exterior Finish: Porcelain enameled steel, color as selected by Owner.
  - 5. Manufacturers:
    - a. To be selected by Owner.
- C. Refrigerator, Typical Dwelling Units: Free-standing, top-mounted freezer, and frost-free.
  - 1. Capacity: Total minimum storage of 17.0 cubic ft; minimum 29 percent freezer capacity.
  - 2. Energy Usage: Energy Star Rated.
  - 3. Features: Include glass shelves, automatic icemaker, and light in freezer compartment.
  - 4. Exterior Finish: Porcelain enameled steel, color as selected by Owner.
  - 5. Manufacturers:
    - a. To be selected by Owner.
- D. Range, Accessible Dwelling Units: Electric, free-standing, with plug-in heating elements and removable drip pans.
  - 1. Size: 30 inches wide.
  - 2. Oven: Self-cleaning.
  - 3. Elements: Four (4).
  - 4. Controls: Solid state electronic.
  - 5. Features: Include oven door window, broiler pan and grid, oven light, anti-tip restraint, and front mounted controls.

6. Exterior Finish: Porcelain enameled steel, color as selected by Owner.
7. Manufacturers:
  - a. To be selected by Owner.
- E. Range, Typical Dwelling Units: Electric, free-standing, with plug-in heating elements and removable drip pans.
  1. Size: 30 inches wide.
  2. Oven: Manual cleaning.
  3. Elements: Four (4).
  4. Controls: Push-to-turn knobs with electronic clock and timer.
  5. Features: Include oven door window, broiler pan and grid, oven light, and anti-tip restraint.
  6. Exterior Finish: Porcelain enameled steel, color as selected by Owner.
  7. Manufacturers:
    - a. To be selected by Owner.
- F. Cooking Exhaust, Accessible Dwelling Units: Range hood; fan and light wired to wall switches. Refer to drawings for switch heights.
  1. Size: 30 inches wide.
  2. Fan: Two-speed, 220 cfm
  3. Exhaust: Recirculating.
  4. Features: Include cooktop light and removable grease filter.
  5. Exterior Finish: Painted steel, color as selected by Owner.
  6. Manufacturers:
    - a. To be selected by Owner.
- G. Microwave/Hood, Typical Dwelling Units: Over-the-range, microwave/hood combination.
  1. Capacity: 1.7 cubic ft.
  2. Power: 1000 watts.
  3. Fan: Two-speed, 220 cfm
  4. Exhaust: Recirculating.
  5. Features: Include turntable, cooktop light, night light, 2-speed exhaust fan, built-in trim kit, and undercabinet mounting kit.
  6. Exterior Finish: Painted steel, color as selected by Owner.
  7. Manufacturers:
    - a. To be selected by Owner.
- H. Microwave, Accessible Dwelling Units: Countertop.
  1. Capacity: 1.3 cubic ft.
  2. Power: 1000 watts.
  3. Height: 12 inches maximum.
  4. Features: Include turntable.
  5. Exterior Finish: Painted steel, color as selected by Owner.
  6. Manufacturers:
    - a. To be selected by Owner.
- I. Dishwasher, Accessible Dwelling Units: Undercounter, for installation at 34 inch counters.
  1. Controls: Solid state electronic.
  2. Energy Usage: Energy Star Rated.
  3. Wash Options: Two (2).
  4. Cycles: Six (6), including heavy, sanitize, normal, eco, quick, and rinse and hold.
  5. Features: Include rinse aid dispenser, optional no-heat dry, optional water temperature boost, adjustable upper rack, and adjustable lower rack.
  6. Finish: Porcelain enameled steel, color as selected by Owner.
  7. Manufacturers:
    - a. To be selected by Owner.
- J. Dishwasher, Typical Dwelling Units: Undercounter.
  1. Controls: Solid state electronic.
  2. Energy Usage: Energy Star Rated.
  3. Wash Options: Three (3).

4. Cycles: Four (4), including heavy, normal, light, and auto-sense.
  5. Features: Include rinse aid dispenser, optional no-heat dry, optional water temperature boost, adjustable upper rack, and customizable bottom rack .
  6. Finish: Porcelain enameled steel, color as selected by Owner.
  7. Manufacturers:
    - a. To be selected by Owner.
- K. Grease Shield: Wall-mounted backsplash type; countersunk screw attachment.
1. Material: Vinyl.
  2. Width: To match width of range.
  3. Finish: Color as selected by Owner.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify utility rough-ins are provided and correctly located.

### **3.02 INSTALLATION**

- A. All appliances to be installed in locations as shown on Drawings.
- B. Install in accordance with manufacturer's instructions.
- C. Coordinate installation/operating dimensions/clearances for all appliances with Millwork Cabinetry layouts.
- D. Provide all installation hardware, accessories kits, and power cords as required for complete installation of each appliance.
- E. Anchor built-in equipment in place.

### **3.03 ADJUSTING**

- A. Adjust equipment to provide efficient operation.

### **3.04 CLEANING**

- A. Remove packing materials from equipment and properly discard.
- B. Wash and clean equipment.

### **3.05 CLOSE OUT**

- A. Operating Manuals for each appliance shall be left in the individual Dwelling Units and Community Building kitchen respectively, unless directed otherwise.
- B. Warranty registration information shall be turned over to Owner upon completion of installation.

**END OF SECTION**



**SECTION 12 21 13**  
**HORIZONTAL LOUVER BLINDS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Horizontal PVC slat louver blinds.
- B. Operating hardware.

**1.02 REFERENCE STANDARDS**

**1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating physical and dimensional characteristics and operating features.
- C. Manufacturer's Installation Instructions: Indicate special procedures.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Horizontal Louver Blinds:
  - 1. CACO Inc.: [www.cacoinc.com](http://www.cacoinc.com)
  - 2. SWFcontract, a division of Spring Window Fashions, LLC.: [www.swfcontract.com](http://www.swfcontract.com).
    - a. Bali Blinds.
    - b. Graber Blinds

**2.02 BLINDS**

- A. Description: Horizontal slat louvers hung from full-width headrail with full-width bottom rail.
  - 1. Provide 1 inch 'Mini-Blind' horizontal louver blinds at all Dwelling Unit windows.
  - 2. Provide 1 inch 'Mini-Blind' horizontal louver blinds at all Community Building windows.
- B. Manual Operation: Control of raising and lowering by counterbalance spring with full range locking; blade angle adjustable by control wand.
- C. Plastic Slats: Extruded PVC, square slat corners.
  - 1. Width: 1 inch.
  - 2. Thickness: 0.017 inch.
  - 3. Color: As selected by Owner.
  - 4. Texture: Smooth.
- D. Slat Support: Woven polypropylene cord, ladder configuration.
- E. Head Rail: Pre-finished, formed steel box, with end caps; internally fitted with hardware, pulleys, and bearings for operation; same depth as width of slats.
  - 1. Height: 1 inches.
  - 2. Color: Same as slats.
- F. Bottom Rail: Pre-finished, formed steel ; with end caps.
  - 1. Color: Same as headrail.
- G. Control Wand: Extruded solid plastic; hexagonal shape.
  - 1. Length of window opening height less 3 inch.
- H. Headrail Attachment: Wall brackets.
- I. Accessory Hardware: Type recommended by blind manufacturer.

**2.03 FABRICATION**

- A. Fabricate blinds to fit within openings with uniform edge clearance of 1/8 inch.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that openings are ready to receive the work.
- B. Ensure structural blocking and supports are correctly placed. See Section 06 10 00.

### **3.02 INSTALLATION**

- A. Install blinds in accordance with manufacturer's instructions.
- B. Secure in place with concealed fasteners.
- C. Install intermediate head supports at midpoint of double windows.

### **3.03 ADJUSTING**

- A. Adjust blinds for smooth operation.

### **3.04 CLEANING**

- A. Clean blind surfaces just prior to occupancy.

**END OF SECTION**



**SECTION 12 35 30**  
**RESIDENTIAL CABINETS AND COUNTERTOPS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Kitchen cabinets.
- B. Kitchen countertops.
- C. Vanity cabinets.
- D. Vanity countertops.
- E. Miscellaneous Work Surfaces.

**1.02 RELATED REQUIREMENTS**

- A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between casework and countertops and adjacent walls, floors, and ceilings.

**1.03 REFERENCE STANDARDS**

- A. ANSI A208.1 - American National Standard for Particleboard; 2009.
- B. ANSI A208.2 - American National Standard for Medium Density Fiberboard for Interior Use; 2009.
- C. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- E. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2009.
- F. KCMA A161.1 - Performance and Construction Standard for Kitchen and Vanity Cabinets; 2012.
- G. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- H. UFAS - Uniform Federal Accessibility Standards - HUD 24 CFR part 40; 1984.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide component dimensions, configurations, and construction details.
- C. Certificate: Submit Kitchen Cabinet Manufacturers Association (KCMA) certificate showing conformance with KCMA A161.1.
- D. Shop Drawings: Indicate casework locations, scale plans, elevations, clearances required, rough-in and anchor placement dimensions and tolerances, and color samples.
- E. Manufacturer's Qualification Statement.
- F. Warranty: Manufacturer's warranty for all items provided under this section.
  - 1. Cabinets: Manufacturer's standard 1 year warranty.
  - 2. Acrylic or Acrylic/Polyester Vanity Countertop: Manufacturer's 10 year warranty against defects.

**1.06 QUALITY ASSURANCE**

- A. Manufacturer: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

**PART 2 PRODUCTS**

**2.01 CABINETS**

- A. Manufacturers:

1. All Wood Cabinetry Inc.; "All Wood": [www.allwoodfast.com](http://www.allwoodfast.com)
  2. American Traditions/S&W Cabinets, Inc; Shaker Poplar: [www.swcabinets.com](http://www.swcabinets.com)
  3. Mid-America Cabinets Inc; "Sierra/Mesa" : [www.midamericacabinets.com](http://www.midamericacabinets.com).
  4. Wellborn Cabinet, Inc; Home Concepts - All Plywod: [www.wellborn.com/#sle](http://www.wellborn.com/#sle).
  5. Wolf Home Products; Wolf Classic Cabinets: [www.wolfhomeproducts.com/#sle](http://www.wolfhomeproducts.com/#sle).
  6. Or approved equal.
- B. Kitchen and Vanity Cabinets: Premanufactured and factory-finished, complying with construction and testing requirements in KCMA A161.1.
- C. Cabinet Box: Framed construction.
1. Side Panels: 5/8 inch Plywood.
    - a. Exposed Side Panel Finish: Hardwood veneer, coordinate with cabinet door and drawer color/finish.
  2. Back Panel: 1/4 inch Plywood.
  3. Bottom (and Top) Panel: 1/2 inch Plywood, dadoed into side panels and interlocked with hanging rail.
  4. Face Frame: 3/4 inch kiln-dried hardwood, screwed and glued.
  5. Interior Cabinet Finish: Thermally fused laminate.
  6. Exposed Panel Edges: Finish with manufacturer's standard edge banding, color coordinated with other exposed finishes.
  7. Extend base and upper cabinets, and shelves into corners, typical.
- D. Cabinet Door/Drawer Configuration: Partial overlay.
- E. Cabinet Doors:
1. Solid wood, stained finish.
  2. 3/4 inch kiln-dried hardwood frame; mortice and tenon construction, 1/4 inch plywood center panel with hardwood veneer finish.
  3. Stain Color: As selected by Owner.
- F. Drawers:
1. 1/2 inch Birch plywood full box with butted joints, 1/4 inch Birch plywood bottom.
  2. Drawer Front: 3/4 inch kiln-dried hardwood.
  3. Interior Finish: Manufacturer's standard.
- G. Shelves: 5/8 inch plywood.
1. Exposed shelf edges: Finish with manufacturer's standard edge banding, color coordinated with other exposed finishes.
- H. Cabinet Hardware: As selected from manufacturer's standard types, styles and finishes.
1. Drawer and Cabinet Pulls: Satin nickel, wire pulls 4 inches wide
    - a. Hardware to comply with accessibility requirements of UFAS, and ADA Standards where applicable.
  2. Hinges: Manufacturer's standard self-closing concealed hinges.
  3. Drawer Slides: Manufacturer's standard drawer slides.
- I. Exterior Finish: Factory-applied urethane; 2 color coats with top coat min.
1. Color: To be selected by Owner from manufacturer's standard line.

## 2.02 COUNTERTOPS

- A. Kitchen Countertops and all Countertops in Laundry: Post formed plastic laminate over particle board with, rolled edge, and coved to back splash.
1. Side Splash: Plastic laminate over particle board, square internal intersections to back splash and top surface, contoured to suit counter top profile, and of equal height.
    - a. Provide side splash where end of countertops abut partitions/endwalls.
  2. Colors/Patterns: To be selected by Owner from manufacturer's standard line.
- B. Vanity Countertops: Post formed plastic laminate over particle board, coved to back splash.
1. Side Splash: Plastic laminate over particle board, square internal intersections to back splash and top surface, contoured to suit counter top profile.
    - a. Provide side splash where end of countertops abut partitions/endwalls.
  2. Colors/Patterns: To be selected by Owner from manufacturer's standard line.

## **2.03 MATERIALS**

- A. Adhesives Used for Assembly: Comply with VOC requirements for adhesives and sealants as specified in Section 01 61 16.
- B. Wood-Based Materials:
  - 1. Solid Wood: Air-dried to 4.5 percent moisture content, then tempered to 6 percent moisture content before use.
- C. Solid Wood: Clear, dry, sound, plain sawn, selected for species grain and color, no defects.
- D. Hardwood Plywood: Veneer core; HPVA HP-1 Grade as indicated; same species as exposed solid wood, clear, compatible grain and color, no defects. Band exposed edges with solid wood of same species as veneer.
- E. Concealed Solid Wood or Plywood: Any species and without defects affecting strength or utility.
- F. Particleboard: Composed of wood chips, medium density, with waterproof resin binders; of grade to suit application; sanded faces; complying with ANSI A208.1.
- G. Medium Density Fiberboard (MDF): Composed of cellulosic fibers and resin cured under heat and pressure; grade to suite application; complying with ANSI A208.2.
- H. Thermally Fused Laminate (TFL): Melamine resin, NEMA LD 3, Type VGL laminate panels.

## **2.04 FABRICATION**

- A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- B. Fabricate corners and joints without gaps.
- C. Fabricate each unit to be rigid and not dependent on adjacent units for rigidity.
- D. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
  - 1. Join lengths of tops using best method recommended by manufacturer.
  - 2. Fabricate to overhang fronts and ends of cabinets 1/2 inch except where top butts against cabinet or wall.
  - 3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.
  - 4. Finish all exposed ends of countertops, including ends abutting appliances.
- E. When necessary to cut and fit countertops on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- F. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
  - 1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
  - 2. Height: 4 inches, unless otherwise indicated.
- G. Wall-Mounted Counters: Provide aprons, brackets, and braces as indicated on drawings.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify adequacy of support framing.

### **3.02 INSTALLATION**

- A. Install casework, components and accessories in accordance with manufacturer's instructions.
- B. Set casework items plumb and square, securely anchored to building structure.
- C. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch.

### **3.03 CLEANING**

- A. Clean casework, countertops, shelves, and hardware.

### **3.04 PROTECTION**

- A. Do not permit finished casework to be exposed to continued construction activity.

## **END OF SECTION**



**SECTION 14 24 00**  
**HYDRAULIC ELEVATORS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Complete hydraulic elevator systems.
  - 1. Passenger type.
- B. Elevator Maintenance Contract.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Includes elevator machine foundation, elevator pit, grouting thresholds, and grouting hoistway entrance frames.
- B. Section 09 21 16 - Gypsum Board Assemblies: Gypsum shaft walls.
- C. Section 09 65 00 - Resilient Flooring: Floor finish in car.
- D. Section 10 44 00 - Fire Protection Specialties: Fire extinguisher in elevator machine room.
- E. Section 21 13 13 - Wet-Pipe Sprinkler Systems: Sprinkler heads in hoistway.

**1.03 REFERENCE STANDARDS**

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; current edition.
- B. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum; 2014 (2015 Errata).
- C. AISC 360 - Specification for Structural Steel Buildings; 2010.
- D. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings, Safety Performance Specifications and Methods of Test; 2010.
- E. ASME A17.1 - Safety Code for Elevators and Escalators; 2013.
- F. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks; 2014.
- G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- I. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2012.
- J. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015 (Errata 2016).
- K. ITS (DIR) - Directory of Listed Products; current edition.
- L. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
- M. NEMA MG 1 - Motors and Generators; 2014.
- N. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2016.
- P. PS 1 - Structural Plywood; 2009.
- Q. UL (DIR) - Online Certifications Directory; current listings at [database.ul.com](http://database.ul.com).

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate work with other installers to provide conduits necessary for installation of wiring including but not limited to:
    - a. Elevator equipment devices remote from elevator machine room or hoistway.
    - b. Telephone service for machine room.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit data on following items:
  - 1. Signal and operating fixtures, operating panels, and indicators.

2. Car design, dimensions, layout, and components.
  3. Car and hoistway door and frame details.
  4. Electrical characteristics and connection requirements.
- C. Shop Drawings: Include appropriate plans, elevations, sections, diagrams, and details on following items:
1. Elevator Equipment and Machines: Size and location of driving machines, power units, controllers, governors, and other components.
  2. Hoistway Components: Size and location of car guide rails, buffers, jack unit and other components.
  3. Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.
  4. Clearances and over-travel of car.
  5. Locations in hoistway and machine room of traveling cables and connections for car lighting and telephone.
  6. Location and sizes of hoistway and car doors and frames.
  7. Electrical characteristics and connection requirements.
  8. Indicate arrangement of elevator equipment and allow for clear passage of equipment through access openings.
- D. Samples: Submit samples illustrating car interior finishes, car and hoistway door and frame finishes, and handrail material and finish in the form of cut sheets or finish color selection brochures.
- E. Testing Agency's Qualification Statement.
- F. Initial Maintenance Contract.
- G. Maintenance Contract: Submit proposal to Owner for standard one year continuing maintenance contract agreement in accordance with ASME A17.1 and requirements as indicated, starting on date initial maintenance contract is scheduled to expire.
1. Indicate in proposal the services, obligations, conditions, and terms for agreement period and for renewal options.
- H. Operation and Maintenance Data:
1. Parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.
  2. Operation and maintenance manual.
  3. Schematic drawings of equipment and hydraulic piping, and wiring diagrams of installed electrical equipment with list of corresponding symbols to identify markings on machine room and hoistway apparatus.

## **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and approved by elevator equipment manufacturer.
- C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of type specified in this section.
- D. Products Requiring Fire Resistance Rating: Listed and classified by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
- E. Products Requiring Electrical Connection: Listed and classified by UL (DIR) or testing agency acceptable to authorities having jurisdiction as suitable for the purpose indicated in construction documents.

## **1.07 WARRANTY**

- A. Provide manufacturer's warranty for elevator operating equipment and devices for one year from Date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Hydraulic Elevator Manufacturers:
  - 1. Otis Elevator Company: [www.otis.com](http://www.otis.com).
  - 2. Schindler Elevator Corporation: [www.schindler.com](http://www.schindler.com).
  - 3. ThyssenKrupp Elevator: [www.thyssenkruppelevator.com](http://www.thyssenkruppelevator.com).

### **2.02 HYDRAULIC ELEVATORS**

- A. Hydraulic Passenger Elevator:
  - 1. Hydraulic Elevator Equipment:
    - a. Holeless hydraulic with cylinder mounted within hoistway.
  - 2. Drive System:
    - a. Variable voltage variable frequency (VVVF) to modulate motor speed.
  - 3. Operation Control Type:
  - 4. Service Control Types:
    - a. Standard service control.
    - b. Independent service control.
  - 5. Interior Car Height: 96 inch.
  - 6. Electrical Power: 208 volts; alternating current (AC); three phase; 60 Hz.
  - 7. Rated Net Capacity: 2100 pounds.
  - 8. Rated Speed: 100 feet per minute.
  - 9. Hoistway Size: As indicated on drawings.
  - 10. Interior Car Platform Size: As indicated on drawings.
  - 11. Elevator Pit Depth: 48 inch.
  - 12. Overhead Clearance at Top Floor: 144 inch.
  - 13. Travel Distance: As indicated on drawings.
  - 14. Number of Stops: As indicated on drawings.
  - 15. Number of Openings: 1 Front.
  - 16. Hydraulic Equipment Location: As indicated on drawings

### **2.03 COMPONENTS**

- A. Elevator Equipment:
  - 1. Motors, Hydraulic Equipment, Controllers, Controls, Buttons, Wiring, Devices, and Indicators: Comply with NFPA 70; see Section 26 05 83.
  - 2. Guide Rails, Cables, Buffers, Attachment Brackets and Anchors: Design criteria for components includes safety factors in accordance with applicable requirements of Elevator Code, ASME A17.1.
  - 3. Buffers:
  - 4. Lubrication Equipment:
    - a. Provide grease fittings for periodic lubrication of bearings.
- B. Electrical Equipment:
  - 1. Motors: NEMA MG 1.
  - 2. Boxes, Conduit, Wiring, and Devices: As required by NFPA 70; see Sections 26 05 33.13 and 26 05 83.
  - 3. Spare Conductors: Provide ten percent in extra conductors and two pairs of shielded audio cables in traveling cables.
  - 4. Include wiring and connections to elevator devices remote from hoistway and between elevator machine room. Provide additional components and wiring to suit machine room layout. See Section 26 05 83.

### **2.04 PERFORMANCE REQUIREMENTS**

- A. Regulatory Requirements: Comply with ASME A17.1, applicable local codes, and authorities having jurisdiction (AHJ).
- B. Perform structural steel design, fabrication, and installation in accordance with AISC 360.
- C. Perform welding of steel in accordance with AWS D1.1/D1.1M.

- D. Fabricate and install door and frame assemblies in accordance with NFPA 80 and in compliance with requirements of authorities having jurisdiction.
- E. Perform electrical work in accordance with NFPA 70.

## **2.05 OPERATION CONTROLS**

- A. Elevator Controls: Provide landing operating panels and landing indicator panels.
  - 1. Landing Operating Panels: Metallic type, one for originating "Up" and one for originating "Down" calls, one button only at terminating landings; with illuminating indicators.
  - 2. Landing Indicator Panels: Illuminating.
- B. Interconnect elevator control system with building fire alarm, card access, and smoke alarm systems.
- C. Door Operation Controls:
  - 1. Program door control to open doors automatically when car arrives at floor landing.
  - 2. Render "Door Close" button inoperative when car is standing at dispatch landing with doors open.
  - 3. Door Safety Devices: Moveable, retractable safety edges, quiet in operation; equipped with photo-electric light rays.

## **2.06 OPERATION CONTROL TYPE**

- A. Selective Collective Automatic Operation Control: Applies to car in single elevator shaft.
  - 1. Refer to description provided in ASME A17.1.
  - 2. Automatic operation by means of one button in the car for each landing served and by "UP" and "DOWN" buttons at the landings.
  - 3. Stops are registered by momentary actuation of landing car buttons without consideration of the number of buttons actuated or the sequence buttons are actuated, but the stops are made in the order that landings are reached in each direction of travel.
  - 4. All "UP" landing calls are made when car is traveling in the up direction.
  - 5. All "DOWN" landing calls are made when car is traveling in the down direction.
  - 6. Uppermost and lowermost calls are answered as soon as they are reached without consideration of the car travel direction.

## **2.07 SERVICE CONTROL TYPE**

- A. Independent Service Control:
  - 1. Provide key operated "Independent Service" on car operating panel. Key activation will remove that car from normal operation and cancel pre-registered car calls.
  - 2. Car will respond to selected floor. Car will not respond to any calls from landing call buttons. Car will only respond to calls placed on the car operating panel. Doors will remain open at last landing requested. Doors will close with a constant pressure on "Door Close" button.
  - 3. Key activation to normal operation will return car to normal operation.

## **2.08 MATERIALS**

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), natural anodized finish unless otherwise indicated.
- B. Plywood: PS 1, Structural I, Grade C-D or better, sanded.
- C. Tempered Glass: 3/8 inch minimum thickness, fully tempered in compliance with ASME A17.1, 16 CFR 1201, ANSI Z97.1, and ASTM C1048 tempered glass requirements.
- D. Resilient Flooring: Vinyl tile flooring and Resilient base, see Section 09 65 00.
- E. Plastic Laminate: NEMA LD 3, Type HGS, color as selected by Architect from manufacturer's standard line of colors.

## **2.09 CAR AND HOISTWAY ENTRANCES**

- A. Elevator, No. 1:
  - 1. Car and Hoistway Entrances, Main Elevator Lobby:
    - a. Framed Opening Finish and Material: Alkyd enamel on steel.
    - b. Car Door Material: Powder coat on steel, with rigid sandwich panel construction.



- c. Hoistway Door Material: Powder coat on steel, with rigid sandwich panel construction.

## **2.10 CAR EQUIPMENT AND MATERIALS**

- A. Elevator Car, No. 1:
  - 1. Car Operating Panel: Provide main and auxiliary; flush-mounted applied face plate, with illuminated call buttons corresponding to floors served with "Door Open" button, "Door Close" button, and alarm button.
    - a. Panel Material: Integral with front return; one per car.
    - b. Car Floor Position Indicator: Above door with illuminating position indicators.
    - c. Locate alarm button where it is unlikely to be accidentally actuated; not more than 54 inch above car finished floor.
  - 2. Flooring: Carpeting.
  - 3. Front Return Panel: Match material of car door.
  - 4. Door Wall: Plastic laminate on plywood.
  - 5. Hand Rail: Aluminum, at all three sides. Provide open clearance space 1-1/2 inch (38 mm) wide to face of wall.
    - a. Aluminum Finish: Clear anodized.
  - 6. Ceiling:
    - a. Canopy Ceiling: Plastic laminate on plywood.
- B. Car Accessories:
  - 1. Certificate Frame: Stainless steel frame glazed with tempered glass, and attached with tamper-proof screws.

## **2.11 FINISHES**

- A. Powder Coat on Steel: Clean and degrease metal surface; apply one coat of primer; two coats of powder coat.
- B. Finish Paint for Metal Surfaces: Alkyd enamel, semi-gloss, color as selected, complying with VOC limitations of authorities having jurisdiction (AHJ).
- C. Clear Anodized Finish: Class I, AAMA 611 AA-M12C22A41, clear anodic coating with electrolytically deposited organic seal; not less than 0.7 mil, 0.0007 inch thick.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify existing conditions before starting this work.
- B. Verify that hoistway, pit, and machine room are ready for work of this section.
- C. Verify hoistway shaft and openings are of correct size and within tolerance.
- D. Verify location and size of machine foundation and position of machine foundation bolts.
- E. Verify that electrical power is available and of correct characteristics.

### **3.02 PREPARATION**

- A. Arrange for temporary electrical power for installation work and testing of elevator components.
- B. Excavate for in-ground hydraulic cylinder casing and remove subsoil from site; see Section 31 23 16.
- C. Maintain in-ground shaft alignment of 1/2 inch maximum from plumb.
  - 1. Fill over-excavated shaft depth with lean concrete.
- D. Maintain elevator pit excavation free of water.

### **3.03 INSTALLATION**

- A. Coordinate this work with installation of hoistway wall construction.
- B. Install system components, and connect equipment to building utilities.
- C. Provide conduit, electrical boxes, wiring, and accessories; see Sections 26 05 33.13 and 26 05 83.
- D. Install hydraulic piping between cylinder and pump unit.

- E. Mount machines, motors, and pumps on vibration and acoustic isolators.
  - 1. Place on structural supports and bearing plates.
  - 2. Securely fasten to building supports.
  - 3. Prevent lateral displacement.
- F. Install hoistway, elevator equipment, and components in accordance with approved shop drawings.
- G. Install guide rails to allow for thermal expansion and contraction movement of guide rails.
- H. Accurately machine and align guide rails, forming smooth joints with machined splice plates.
- I. Install hoistway door sills, frames, and headers in hoistway walls; grout sills in place, set hoistway floor entrances in alignment with car openings, and align plumb with hoistway.
- J. Structural Metal Surfaces: Clean surfaces of rust, oil or grease; wipe clean with solvent; prime two coats.
- K. Wood Surfaces not Exposed to Public View: Finish with one coat primer; one coat enamel.
- L. Adjust equipment for smooth and quiet operation.

#### **3.04 TOLERANCES**

- A. Guide Rail Alignment: Plumb and parallel to each other in accordance with ASME A17.1 and ASME A17.2.
- B. Car Movement on Aligned Guide Rails: Smooth movement, without any objectionable lateral or oscillating movement or vibration.

#### **3.05 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Testing and inspection by regulatory agencies certified in accordance with ASME QEI-1 will be performed at their discretion.
- C. Operational Tests:
  - 1. Perform operational tests in the presence of Owner and Architect.
  - 2. Test single elevator system by transporting at least 6 persons up from main floor to top floor landings during a five minute period.
  - 3. At an agreed time, and the building occupied with normal building traffic, conduct tests to verify performance.
    - a. Furnish event recording of each landing call registrations, time initiated, and response time throughout entire working day.

#### **3.06 ADJUSTING**

- A. Adjust for smooth acceleration and deceleration of car to minimize passenger discomfort.
- B. Adjust with automatic floor leveling feature at each floor landing to reach 1/4 inch maximum from flush with sill.

#### **3.07 CLEANING**

- A. Remove protective coverings from finished surfaces.
- B. Clean surfaces and components in accordance with manufacturers written instructions.

#### **3.08 PROTECTION**

- A. Do not permit construction traffic within car after cleaning.
- B. Protect installed products until Date of Substantial Completion.
- C. Touch-up, repair, or replace damaged products and materials prior to Date of Substantial Completion.

**END OF SECTION**

**SECTION 14 91 00**  
**FACILITY CHUTES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Trash and Refuse chutes.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 62 00 - Sheet Metal Flashing and Trim: Counterflashing at chute roof vent.
- B. Section 21 13 13 - Wet-Pipe Sprinkler Systems: Connection to sprinklers inside chute.

**1.03 REFERENCE STANDARDS**

- A. ITS (DIR) - Directory of Listed Products; current edition.
- B. NFPA 13 - Standard for the Installation of Sprinkler Systems; 2016.
- C. NFPA 82 - Standard on Incinerators and Waste and Linen Handling Systems and Equipment; 2014.
- D. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for additional requirements.
- B. Product Data: Manufacturer's printed data sheets on each component, indicating which options are provided.
- C. Shop Drawings: Provide detailed layout of chute and components, indicating interface with structure, enclosing walls, and utilities; include the following:
  - 1. Openings in floors and required clearances.
  - 2. Location and size of each field connection to structure.
  - 3. Pipe sizes and locations.
  - 4. Electrical wiring sizes, conduits, and location of connections.
  - 5. Clearly indicate components required but not furnished by chute installer.
- D. Test Reports: Submit for each test/inspection.
- E. Certificates: Certify that chute assembly meets or exceeds NFPA 82 and other specified requirements.
- F. Manufacturer's qualification statement.
- G. Executed warranty.

**1.05 QUALITY ASSURANCE**

- A. Products Requiring Electrical Connection: Listed and classified by UL (DIR), ITS (DIR), or testing agency acceptable to authorities having jurisdiction as suitable for indicated purpose being specified.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

**1.06 WARRANTY**

- A. Installer Warranty: Provide 5-year warranty for facility chutes commencing on Date of Substantial Completion. Complete forms in Owner's name and register with installer.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Facility Chutes:
  - 1. CHUTES International: [www.chutes.com/#sle](http://www.chutes.com/#sle).
  - 2. Valiant Products, Inc: [www.valiantproductsinc.com/#sle](http://www.valiantproductsinc.com/#sle).
  - 3. Wilkinson Hi-Rise: [www.whrise.com/#sle](http://www.whrise.com/#sle).

**2.02 FACILITY CHUTES**

- A. Waste Materials Chutes: Sheet metal, round, constant diameter extending from above roof to lowest floor, with chute intake doors at each floor and bottom of chute discharge door into

designated room as indicated on drawings; complying with requirements of NFPA 82, and the local building code and authorities having jurisdiction.

1. Chute Inside Diameter: 24 inches, minimum.
2. Intake Doors: Hopper type, self-closing and self-latching, with no locks.
3. Intake Door Size: 15 inches wide by 18 inches high, nominal.

## **2.03 COMPONENTS**

- A. Chute: Factory-fabricated to the greatest extent possible, with continuously welded or lock-seamed joints and smooth, nonsnag interior; no protruding bolts, rivets, or hardware and no sharp edges or corners.
  1. Sheet Metal Thickness: 16 gauge, 0.06 inch.
  2. Fire Rating: In compliance with local building code requirements.
  3. Throat Sections: Provide sloped throat sections for chute intake doors, of same material and construction as chute.
  4. Fabricate with support frames at each floor with sound isolator pads and expansion joints in chute between each support point.
    - a. Sound Isolator Pads: Provide manufacturer's standard; 1/4 inch top and bottom waffle design, oil resistant, neoprene with 3/8 inch close grained cork core
- B. Chute Intake Doors: Factory-assembled, UL (DIR) listed and labeled door and frame, with self- or automatic-closing and positive latching; frame designed for chase construction, and flush-mounted.
  1. Material: Stainless steel, brushed or satin finish.
  2. Fire Rating: In compliance with local building code requirements.
  3. Pulls: Provide single action door hardware that is operable without pinching or twisting; polished stainless steel finish.
  4. Signs: Provide markings on frame or face of door that indicates purpose of chute; use engravings, integral raised lettering, or other permanent notation markings.
- C. Chute Discharge Doors: Factory-assembled, UL (DIR) listed and labeled door and frame, with self- or automatic-closing and positive latching, upon activation of smoke detector or fusible link; style as required for facility chute configuration indicated.
  1. Material: Aluminum-coated steel.
  2. Fire Rating: In compliance with local building code requirements.
  3. Vertical Discharge Style: Horizontally closing accordion fire damper, spring-closed.
- D. Chute Access Doors: Provide same construction and fire rating as chute intake doors with locks; provide wherever equipment requiring maintenance is located inside chute, including sprinklers, plumbing, and electrical connections.
- E. Chute Intake and Access Door Locks: Mortise or rim cylinder locks keyed alike; key removable only when door is locked.
- F. Roof Vent: Full diameter, extending at least 48 inches above roof level, with roof deck flange.
  1. Material: Manufacturer's standard.
  2. Provide counterflashing and clamping ring of nonferrous metal compatible with chute material; see Section 07 62 00.
  3. Top Unit: Screened vent.
- G. Fire Suppression Sprinklers: Comply with requirements of NFPA 82 and NFPA 13; provide 1/2 inch NPS sprinkler heads mounted inside chute intake throats at following locations:
  1. At or above top intake opening.
  2. At lowest intake opening.
  3. In buildings of more than two stories, at every other floor.
- H. Spray Cleaning Equipment:
  1. Flushing Spray Unit: Solenoid controlled 3/4-inch NPS spray head mounted above top intake door; see Section 22 10 05 for water piping connections and Section 26 05 83 for wiring connections.
- I. Electrical Controls: 110 VAC; see Section 26 05 83 for wiring connections.
- J. Factory-coat outside of chute with sprayed-on sound-dampening material.

## **PART 3 EXECUTION**

### **3.01 INTERFACE WITH OTHER WORK**

- A. Complete installation and testing of facility chutes and equipment prior to completion of enclosing construction.
- B. Ensure that sprinkler and spray cleaning devices are coordinated with size, location, and installation of related service utilities.
- C. Schedule installation of components to ensure that utility connections are provided in an orderly and expeditious manner.

### **3.02 INSTALLATION**

- A. Install facility chutes and equipment in accordance with NFPA 82, requirements of local authorities having jurisdiction (AHJ), and manufacturer's instructions.
- B. Maintain fire-resistive capacity of enclosing walls.
- C. Install facility chute plumb and without offsets or obstructions that might prevent free fall of materials, except as indicated on drawings in compliance with requirements.
- D. Securely anchor chute components as required to withstand impact and weight of materials placed within chute.
- E. Install roof vent flange to roof deck prior to installation of roofing.
- F. Install counterflashing after roofing installation.
- G. Adjust doors and other operating components for smooth operation.

### **3.03 CLEANING**

- A. After completion of enclosing walls, clean exposed facility chute components; do not remove testing agency labels.

**END OF SECTION**



**SECTION 27 50 10**  
**TELEPHONE, CABLE TELEVISION, AND NETWORK WIRING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Telephone Wiring.
- B. Cable Television Wiring.
- C. Computer Network Cabling.
- D. Accessories.

**1.02 REFERENCE STANDARDS**

- A. BICSI TDMM - Telecommunications Distribution Methods Manual; 13th Edition.
- B. FCC Title 47, Part 76 - Multichannel Video and Cable Television Service; 2013.
- C. NECA/BICSI 568 - Standard for Installing Building Telecommunications Cabling; National Electrical Contractors Association; 2006.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.03 SYSTEM DESCRIPTION - TELEPHONE**

- A. Service entrance from local telephone company.
- B. Premises wiring for individual dwelling unit telephone service including individual terminal jacks.
- C. Combine Telephone and Cable TV jacks into one box where applicable.

**1.04 SYSTEM DESCRIPTION - CABLE TELEVISION**

- A. Service entrance from local cable utility.
- B. Premises wiring for broadband distribution of television signal/ internet, including individual outlets.
- C. Signal at each outlet: 3 dBmV across 75 ohms, minimum, plus 5 dB, minus 0 dB.
- D. Combine Telephone and Cable TV jacks into one box where applicable.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide showing electrical characteristics and connection requirements for each component.
- C. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- D. Operation Data: Instructions for setting and tuning channels.
- E. Maintenance Data: Basic trouble-shooting procedures.

**1.06 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70 and cable television utility company.
- B. Cable television system shall conform to the standards as set forth in FCC Title 47, Part 76.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience with service facilities within 100 miles of Project.
- D. Installer Qualifications: Authorized installer of specified manufacturer with service facilities within 100 miles of the project.
  - 1. Installer shall be capable of providing full system testing, inspection, and maintenance services, including spare parts.
- E. Products: Listed, classified and labeled as suitable for the purpose intended.

## **PART 2 PRODUCTS**

### **2.01 COMPONENTS**

- A. Manufacturers:
  - 1. Blonder Tongue Laboratories, Inc: [www.blondertongue.com](http://www.blondertongue.com).
  - 2. Hubbell Electrical Systems: [www.hubbell-wiring.com](http://www.hubbell-wiring.com)
  - 3. Channel Master: [www.channelmaster.com](http://www.channelmaster.com).
  - 4. Thomas and Betts: [www.tnb.com](http://www.tnb.com)
  - 5. Or approved equal.

### **2.02 ACCESSORIES**

- A. Coax Demarcation Enclosure: Secure compartment for terminating coax and mounting of splitters and groundblocks for distribution to individual units.
  - 1. Provide one demarcation enclosure for every Dwelling Unit.
  - 2. Keptel OPE-92000 or equal.
- B. Telephone Tap (Jack)
  - 1. Recessed, suitable for mounting in standard electrical wall box, type and model suitable to local telephone company.
- C. Cable Tap (Outlet):
  - 1. Recessed, suitable for mounting in standard electrical wall box, all channel, back-matched tap.
  - 2. Through Loss: 0.7 dB, maximum.
  - 3. Return Loss: 20 dB, maximum.
  - 4. Isolation: 12 dB.
  - 5. Connector: F type coaxial connector.
- D. Ethernet/Internet Tap (Cat-6 jack)
  - 1. Recessed, suitable for mounting in standard electrical wall box, conforming to TIA/EIA-568.
  - 2. Frequency Range: 250MHz
  - 3. Connector: 'Keystone' type connector.
- E. Splitter:
  - 1. Inline, all channel, back-matched splitter.
  - 2. Through Loss: 3.5 dB for two-way; 6.7 dB for four-way.
  - 3. Isolation: 16 dB, minimum.
- F. Main Distribution Cable:
  - 1. Description: RG11/F or RG6/F as required.
- G. Branch Distribution Cable:
  - 1. Description: RG 6/F.
- H. Network Cable:
  - 1. Description: CAT6 multistrand cable.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Connect cable television service in accordance with cable utility instructions.
- C. Install telephone and cable television in accordance with the requirements of BICSI TDMM and NECA/BICSI 568, current editions.
- D. Provide proper grounding of telephone and television system components and wiring. Bond outdoor components to lightning protection system.

### **3.02 CABLE TELEVISION SYSTEM MAINTENANCE**

- A. Provide service and maintenance of television system for 3 years from Date of Substantial Completion.

**END OF SECTION**



**SECTION 28 10 00**  
**ACCESS CONTROL**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Access control system requirements.
- B. Access control units and software.
- C. Access control point peripherals, including readers and keypads.
- D. Accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 07 84 00 - Firestopping.
- B. Section 08 71 00 - Door Hardware: Electrically operated door hardware, for interface with access control system.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

**1.03 REFERENCE STANDARDS**

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2015.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 294 - Access Control System Units; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate the work with other installers to provide suitable door hardware as required for both access control functionality and code compliance.
  - 2. Coordinate the placement of readers with millwork, furniture, equipment, etc. installed under other sections or by others.
  - 3. Coordinate the work with other installers to provide power for equipment at required locations.
  - 4. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

**1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Include plan views indicating locations of system components and proposed size, type, and routing of conduits and/or cables. Include elevations and details of proposed equipment arrangements. Include system interconnection schematic diagrams. Include requirements for interface with other systems.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.
- E. Operation and Maintenance Data: Include detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.
- F. Software: One copy of software not resident in read-only memory.

**1.06 QUALITY ASSURANCE**

- A. Comply with the following:
  - 1. NFPA 70.
  - 2. The requirements of the local authorities having jurisdiction.

3. Applicable TIA/EIA standards.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

#### **1.07 FIELD CONDITIONS**

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

#### **1.08 WARRANTY**

- A. Provide minimum one year manufacturer warranty covering repair or replacement due to defective materials or workmanship.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Access Control Units - Basis of Design: DKS Door King; Series 1830.

#### **2.02 ACCESS CONTROL SYSTEM REQUIREMENTS**

- A. Provide new access control system consisting of required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.
- B. Surge Protection:
  1. Provide surge protection for readers and door strikes/locks.
- C. Access Control Points:
  1. Exterior Doors:
    - a. Function: Operational and emergency.
    - b. Access: Controlled entry, free exit.
    - c. Peripherals on Secure Side:
      - 1) Reader/Keypad: Contactless key fob reader.
    - d. Locking Device: Electric strike.
      - 1) Configuration: Fail-secure.
- D. Computers Required:
  1. Workstation Computer(s):
    - a. Quantity: One.
    - b. Location(s): Leasing Office.
    - c. Peripherals required for each workstation computer:
      - 1) Mouse and keyboard.
      - 2) Monitor(s): One.
      - 3) Alarm/report printer.
- E. Interface with Other Systems:
  1. Provide products compatible with other systems requiring interface with access control system.
  2. Interface with electrically operated door hardware as specified in Section 08 71 00.
- F. Provide products listed, classified, and labeled as suitable for the purpose intended.
  1. Access Control Units and Readers: Listed and labeled as complying with UL 294.

#### **2.03 ACCESS CONTROL UNITS AND SOFTWARE**

- A. Provide access control units and software compatible with readers to be connected.
- B. Unless otherwise indicated, provide software and licenses required for fully operational system.
- C. Access Control Unit:
  1. Basis of Design: DKS Door King; Model 1838 .
  2. Control Capability: 15 doors/ 15 readers.
  3. Database:
    - a. Quantity of Access Codes Supported: 8000.
  4. Operating Modes Supported:
    - a. Proximity key fob.
  5. Features:

- a. Dedicated power loss alarm input.
  - b. Supports database and event exporting.
  - c. Supports database backup.
- D. Computers:
  - 1. Workstation Computers: Unless otherwise indicated, workstation computer hardware and associated peripherals not furnished by access control system manufacturer to be provided by Contractor as part of work of this section, meeting access control system equipment manufacturer's recommended requirements.
  - 2. Servers: Unless otherwise indicated, server hardware and associated peripherals not furnished by access control system manufacturer to be provided by Contractor as part of work of this section, meeting access control system equipment manufacturer's recommended requirements.
- E. Products:
  - 1. Access Control Software:
    - a. Basis of Design: DKS Door King.

## **2.04 ACCESS CONTROL POINT PERIPHERALS**

- A. Provide devices compatible with control units and software.
- B. Provide devices suitable for operation under the service conditions at the installed location.
- C. Readers and Keypads:
  - 1. General Requirements:
    - a. Provide readers compatible with credentials to be used.
    - b. Proximity Readers:
      - 1) Utilize 125 kHz RF communication with compatible credentials.
  - 2. Proximity Reader:
    - a. Basis of Design: DKS Door King; Model 1815-305.
    - b. Read Range: Up to 12 inches.
    - c. Features:
- D. Door Locking Devices (Electric Strikes and Magnetic Locks): Comply with Section 08 71 00.

## **2.05 ACCESSORIES**

- A. Provide components as indicated or as required for connection of access control system to devices and other systems indicated.
- B. Unless otherwise indicated, credentials to be provided by Contractor.
  - 1. Provide credentials compatible with readers and control units/software to be used.
  - 2. Credential Type: Key fob.
- C. Provide cables as indicated or as required for connections between system components.
  - 1. Data Cables for IP Network Connections: Unshielded twisted pair (UTP), minimum Category 5e, complying with Section 27 50 10.

# **PART 3 EXECUTION**

## **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that ratings and configurations of system components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive system components.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to system.
- E. Verify that conditions are satisfactory for installation prior to starting work.

## **3.02 INSTALLATION**

- A. Install access control system in accordance with NECA 1 (general workmanship).
- B. Install products in accordance with manufacturer's instructions.
- C. Wiring Method: Unless otherwise indicated, use wiring in conduit.

1. Use suitable listed cables in wet locations, including underground raceways.
  2. Use suitable listed cables for vertical riser applications.
  3. Conduit: Comply with Section 26 05 33.
  4. Use power transfer hinges complying with Section 08 71 00 for concealed connections to door hardware.
  5. Do not exceed manufacturer's recommended maximum cable length between components.
- D. Provide grounding and bonding in accordance with Section 27 05 26.
- E. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.
- F. Identify system wiring and components in accordance with Section 26 05 53.

### **3.03 FIELD QUALITY CONTROL**

- A. Prepare and start system in accordance with manufacturer's instructions.
- B. Program system parameters according to requirements of Owner.
- C. Test for proper interface with other systems.
- D. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

### **3.04 CLEANING**

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

**END OF SECTION**

**SECTION 31 31 16**  
**TERMITE CONTROL**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Chemical soil treatment.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Vapor barrier placement under concrete slab-on-grade.

**1.03 REFERENCE STANDARDS**

- A. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.
- B. Title 7, United States Code, 136 through 136y - Federal Insecticide, Fungicide and Rodenticide Act; 1947 (Revised 2001).

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate toxicants to be used, composition by percentage, dilution schedule, intended application rate.
- C. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements.
- D. Test Reports: Indicate regulatory agency approval reports when required.
- E. Test Reports: Submit termite-resistant sheet manufacturer's summary of independent laboratory and field testing for effectiveness in subterranean termite exclusion.
- F. Manufacturer's Certificate: Certify that toxicants meet or exceed specified requirements.
- G. Manufacturer's Instructions: Indicate caution requirement.
- H. Record and document moisture content of soil before application.
- I. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three (3) years of documented experience.
- J. Warranty: Submit warranty and ensure that forms have been completed in Owner's name.

**1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing this type of work and:
  - 1. Having minimum of three (3) years documented experience.
  - 2. Approved by manufacturer of treatment materials.
  - 3. Licensed in the State of Oklahoma.

**1.06 WARRANTY**

- A. Provide five year installer's warranty against damage to building caused by termites.
- B. Termite-Resistant Vapor Barrier Sheet: Provide five year manufacturer's limited warranty.

**PART 2 PRODUCTS**

**2.01 CHEMICAL SOIL TREATMENT**

- A. Toxicant Chemical: EPA (Title 7, United States Code, 136 through 136y) approved; synthetically color dyed to permit visual identification of treated soil.
- B. Diluent: Recommended by toxicant manufacturer.
- C. Manufacturers:
  - 1. Bayer Environmental Science Corp; Premise Pre-Construction: [www.backedbybayer.com/pest-management](http://www.backedbybayer.com/pest-management).
  - 2. FMC Professional Solutions; Dragnet SFR: [www.fmcprosolutions.com](http://www.fmcprosolutions.com).
  - 3. Syngenta Professional Products; Altriset: [www.syngentapmp.com](http://www.syngentapmp.com).
- D. Mixes: Mix toxicant to manufacturer's instructions.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that soil surfaces are unfrozen, sufficiently dry to absorb toxicant, and ready to receive treatment.
- B. Verify final grading is complete.

### **3.02 APPLICATION - CHEMICAL TREATMENT**

- A. Comply with requirements of U.S. EPA and applicable state and local codes.
- B. Inject toxicant in accordance with manufacturer's instructions.
- C. Apply toxicant at following locations:
  - 1. Under Slabs-on-Grade.
  - 2. In Crawl Spaces.
  - 3. At Both Sides of Foundation Surface.
  - 4. Soil Within 10 feet of Building Perimeter For a Depth of 4 feet.
- D. Under slabs, apply toxicant 24 hours prior to installation of vapor barrier.
- E. At foundation walls, apply toxicant 12 hours prior to finish grading work outside foundations.
- F. Apply extra treatment to structure penetration surfaces such as pipe or ducts, and soil penetrations such as grounding rods or posts.
- G. Re-treat disturbed treated soil with same toxicant as original treatment.
- H. If inspection or testing identifies the presence of termites, re-treat soil and re-test.

### **3.03 INSTALLATION - BARRIER SHEET**

- A. Comply with ASTM E1643.
- B. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions.

### **3.04 PROTECTION**

- A. Do not permit soil grading over treated work.
- B. Protect sheet materials from damage after completed installation. Repair damage with manufacturer's recommended products and according to the manufacturer's written instructions.

**END OF SECTION**

**SECTION 32 31 23**  
**VINYL FENCES AND GATES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Fence Panels for manual gates.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 50 00 - Metal Fabrications: Trash enclosure gate frames and hardware.

**1.03 REFERENCE STANDARDS**

- A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
- B. ASTM D4216 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly(Vinyl Chloride) (CPVC) Building Products Compounds.
- C. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
- D. ASTM D648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
- E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2016.
- F. ASTM F1999 - Standard Practice for Installation of Rigid Poly(Vinyl Chloride) (PVC) Fence Systems
- G. ASTM F964 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Exterior Profiles Used for Fencing and Railing

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on components, posts, accessories, fittings and hardware.
- C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.
- D. Manufacturer's Installation Instructions: Indicate installation requirements, post foundation anchor bolt templates.

**1.05 QUALITY ASSURANCE**

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

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

- A. Plastic (PVC) Fences and Gates:
  - 1. PlyGem Inc; Solid Privacy: [www.plygem.com](http://www.plygem.com).
  - 2. Illusions Vinyl Fence; Classic Series: [www.illusionsfence.com](http://www.illusionsfence.com).
  - 3. Weatherables by USA Vinyl; Savannah: [www.weatherables.com](http://www.weatherables.com).
  - 4. Poly Vinyl Creations Inc.; Standard Series: [www.polyvinylc.com](http://www.polyvinylc.com).

**2.02 MATERIALS**

- A. General: Pickets: Conforming to ASTM D4216; Extruded, hollow, ultra-violet-resistant, polyvinyl chloride (PVC) with integral color.
- B. Pickets: One piece extruded Tongue and Groove profile.
- C. Picket Caps: Molded, sized to fit specified pickets.
- D. Reinforcement: Galvanized steel or aluminum as provided by manufacturer.

**2.03 COMPONENTS**

- A. As Indicated on the Drawings and as follows:
- B. Color(s): To be selected by Owner from manufacturer's standard range.
- C. Posts: 6 inch by 6 inch, 0.150 inch wall.

- D. Rails: 2 inch by 6-1/2 inch; Slotted.
- E. Pickets: 6 by 8 foot extruded panel, molded..
- F. Hardware: Manufacturer's standard connectors.

#### **2.04 ACCESSORIES**

- A. Caps: Standard; sized to fit post; Color to match fence.

#### **2.05 FINISHES**

- A. Accessories: Same finish as fencing.

### **PART 3 EXECUTION**

#### **3.01 INSTALLATION**

- A. Install site furnishings in accordance with approved shop drawings, and manufacturer's installation instructions and ASTM F1999.

#### **3.02 TOLERANCES**

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.

#### **3.03 CLEANING**

- A. Remove temporary protective coverings and clean installed fencing in accordance with manufacturer's instructions. Protect from damage.

**END OF SECTION**



**SECTION 32 33 00**  
**SITE FURNISHINGS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Picnic Table(s).

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Concrete slabs associated with site furnishings.
- B. Section 05 50 00 - Metal Fabrications: Anchors to attach site furnishings to mounting surfaces.
- C. Section 09 91 13 - Exterior Painting.

**1.03 REFERENCE STANDARDS**

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's specifications and descriptive literature, installation instructions, and maintenance information.

**1.05 WARRANTY**

- A. Provide manufacturer's warranty against defects in materials or workmanship for a period of 10 years from Date of Substantial Completion.

**PART 2 PRODUCTS**

**2.01 METAL FURNISHINGS**

- A. Metal Furnishings, General:
  - 1. Pipe: Carbon steel, ASTM A53/A53M, Schedule 40.
  - 2. Tube: Carbon steel, ASTM A500/A500M.
  - 3. Steel components: Plates, bars, and shapes complying with ASTM A36/A36M and tubing complying with ASTM A500/A500M; cleaned, treated, and vinyl-coated.
    - a. Color: As selected by Owner from manufacturer's standard range.
  - 4. Hardware: Stainless steel.
- B. Picnic Table(s); Accessible: Metal frame, tabletop, and seat section complying with ADA Standards; thermoplastic coated (Plastisol).
  - 1. Frame: Steel.
  - 2. Tabletop and seat: Punched steel.
  - 3. Length: 69 inches.
  - 4. Length of seat: 76 inches
  - 5. Mounting: Freestanding; anchored to slab.
  - 6. Products:
    - a. GameTime, Inc; Tuffclad Series # 28016: [www.gametime.com](http://www.gametime.com).
    - b. Landscape Structures Inc; TenderTuff Series #141684: [www.playlsi.com](http://www.playlsi.com).
    - c. Belson Outdoors LLC; Model #238H-PR8: [www.belson.com](http://www.belson.com).
    - d. Or approved equal

**2.02 ATHLETIC AND PLAYGROUND EQUIPMENT**

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Inspect areas and conditions before installation. Notify Architect in writing of unsatisfactory or detrimental conditions. Do not proceed until conditions have been corrected. Commencing installation constitutes acceptance of work site conditions.

- B. Verify proper installation of mounting surfaces, preinstalled anchor bolts, and other mounting devices; and ready to receive site furnishing items.

### **3.02 INSTALLATION**

- A. Install site furnishings in accordance with the Contract Documents, approved shop drawings, and manufacturer's installation instructions.
- B. Coordinate installation of inserts and anchor bolts that must be built in to concrete slabs.
- C. Secure all site furnishings with manufacturer's recommended anchoring devices.
- D. Provide level mounting surfaces for site furnishing items.

**END OF SECTION**